CISCO SYSTEMS

# Catalyst 3550 Multilayer Switch
# Hardware Installation Guide

November 2004

# C O N T E N T S

# Preface

## Audience

This guide is for the networking or computer technician responsible for installing the Catalyst 3550 multilayer switches. We assume that you are familiar with the concepts and terminology of Ethernet and local area networking.

## Purpose

This guide documents the hardware features of the Catalyst 3550 family of multilayer switches. It provides a quick setup procedure, describes the physical and performance characteristics of each switch, explains how to install a switch, and includes basic troubleshooting information.

This guide does not describe system messages that you might receive or how to configure your switch beyond the basic setup. For more information, see the *Catalyst 3550 Multilayer Switch Software Configuration Guide,* the *Catalyst 3550 Multilayer Switch Command Reference*, the *Catalyst 3550 Multilayer Switch System Message Guide*, and the release notes on Cisco.com. For information about the standard Cisco IOS Release 12.2 commands, see the Cisco IOS documentation set on Cisco.com.

## Conventions

Command descriptions use these conventions:

- Commands and keywords are in **boldface** text.
- Arguments for which you supply values are in *italic*.
- Square brackets ([ ]) mean optional elements.
- Braces ({ }) group required choices, and vertical bars ( | ) separate the alternative elements.
- Braces and vertical bars within square brackets ([{ | }]) mean a required choice within an optional element.

Notes, cautions, and warnings use these conventions and symbols:

**Note** Means *reader take note*. Notes contain helpful suggestions or references to materials not contained in this manual.

⚠

**Caution** Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

⚠

**Warning** **IMPORTANT SAFETY INSTRUCTIONS**

**This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.** Statement 1071

**SAVE THESE INSTRUCTIONS**

**Waarschuwing** **BELANGRIJKE VEILIGHEIDSINSTRUCTIES**

**Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van de standaard praktijken om ongelukken te voorkomen. Gebruik het nummer van de verklaring onderaan de waarschuwing als u een vertaling van de waarschuwing die bij het apparaat wordt geleverd, wilt raadplegen.**

**BEWAAR DEZE INSTRUCTIES**

**Varoitus** **TÄRKEITÄ TURVALLISUUSOHJEITA**

**Tämä varoitusmerkki merkitsee vaaraa. Tilanne voi aiheuttaa ruumiillisia vammoja. Ennen kuin käsittelet laitteistoa, huomioi sähköpiirien käsittelemiseen liittyvät riskit ja tutustu onnettomuuksien yleisiin ehkäisytapoihin. Turvallisuusvaroitusten käännökset löytyvät laitteen mukana toimitettujen käännettyjen turvallisuusvaroitusten joukosta varoitusten lopussa näkyvien lausuntonumeroiden avulla.**

**SÄILYTÄ NÄMÄ OHJEET**

**Attention** **IMPORTANTES INFORMATIONS DE SÉCURITÉ**

**Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers liés aux circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions des avertissements figurant dans les consignes de sécurité traduites qui accompagnent cet appareil, référez-vous au numéro de l'instruction situé à la fin de chaque avertissement.**

**CONSERVEZ CES INFORMATIONS**

Warnung **WICHTIGE SICHERHEITSHINWEISE**

**Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu Verletzungen führen kann. Machen Sie sich vor der Arbeit mit Geräten mit den Gefahren elektrischer Schaltungen und den üblichen Verfahren zur Vorbeugung vor Unfällen vertraut. Suchen Sie mit der am Ende jeder Warnung angegebenen Anweisungsnummer nach der jeweiligen Übersetzung in den übersetzten Sicherheitshinweisen, die zusammen mit diesem Gerät ausgeliefert wurden.**

**BEWAHREN SIE DIESE HINWEISE GUT AUF.**

Avvertenza **IMPORTANTI ISTRUZIONI SULLA SICUREZZA**

**Questo simbolo di avvertenza indica un pericolo. La situazione potrebbe causare infortuni alle persone. Prima di intervenire su qualsiasi apparecchiatura, occorre essere al corrente dei pericoli relativi ai circuiti elettrici e conoscere le procedure standard per la prevenzione di incidenti. Utilizzare il numero di istruzione presente alla fine di ciascuna avvertenza per individuare le traduzioni delle avvertenze riportate in questo documento.**

**CONSERVARE QUESTE ISTRUZIONI**

Advarsel **VIKTIGE SIKKERHETSINSTRUKSJONER**

**Dette advarselssymbolet betyr fare. Du er i en situasjon som kan føre til skade på person. Før du begynner å arbeide med noe av utstyret, må du være oppmerksom på farene forbundet med elektriske kretser, og kjenne til standardprosedyrer for å forhindre ulykker. Bruk nummeret i slutten av hver advarsel for å finne oversettelsen i de oversatte sikkerhetsadvarslene som fulgte med denne enheten.**

**TA VARE PÅ DISSE INSTRUKSJONENE**

Aviso **INSTRUÇÕES IMPORTANTES DE SEGURANÇA**

**Este símbolo de aviso significa perigo. Você está em uma situação que poderá ser causadora de lesões corporais. Antes de iniciar a utilização de qualquer equipamento, tenha conhecimento dos perigos envolvidos no manuseio de circuitos elétricos e familiarize-se com as práticas habituais de prevenção de acidentes. Utilize o número da instrução fornecido ao final de cada aviso para localizar sua tradução nos avisos de segurança traduzidos que acompanham este dispositivo.**

**GUARDE ESTAS INSTRUÇÕES**

¡Advertencia! **INSTRUCCIONES IMPORTANTES DE SEGURIDAD**

**Este símbolo de aviso indica peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considere los riesgos de la corriente eléctrica y familiarícese con los procedimientos estándar de prevención de accidentes. Al final de cada advertencia encontrará el número que le ayudará a encontrar el texto traducido en el apartado de traducciones que acompaña a este dispositivo.**

**GUARDE ESTAS INSTRUCCIONES**

Varning! **VIKTIGA SÄKERHETSANVISNINGAR**

**Denna varningssignal signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du vara medveten om farorna med elkretsar och känna till vanliga förfaranden för att förebygga olyckor. Använd det nummer som finns i slutet av varje varning för att hitta dess översättning i de översatta säkerhetsvarningar som medföljer denna anordning.**

**SPARA DESSA ANVISNINGAR**

Figyelem **FONTOS BIZTONSÁGI ELOÍRÁSOK**

**Ez a figyelmezeto jel veszélyre utal. Sérülésveszélyt rejto helyzetben van. Mielott bármely berendezésen munkát végezte, legyen figyelemmel az elektromos áramkörök okozta kockázatokra, és ismerkedjen meg a szokásos balesetvédelmi eljárásokkal. A kiadványban szereplo figyelmeztetések fordítása a készülékhez mellékelt biztonsági figyelmeztetések között található; a fordítás az egyes figyelmeztetések végén látható szám alapján keresheto meg.**

**ORIZZE MEG EZEKET AZ UTASÍTÁSOKAT!**

Предупреждение ВАЖНЫЕ ИНСТРУКЦИИ ПО СОБЛЮДЕНИЮ ТЕХНИКИ БЕЗОПАСНОСТИ

Этот символ предупреждения обозначает опасность. То есть имеет место ситуация, в которой следует опасаться телесных повреждений. Перед эксплуатацией оборудования выясните, каким опасностям может подвергаться пользователь при использовании электрических цепей, и ознакомьтесь с правилами техники безопасности для предотвращения возможных несчастных случаев. Воспользуйтесь номером заявления, приведенным в конце каждого предупреждения, чтобы найти его переведенный вариант в переводе предупреждений по безопасности, прилагаемом к данному устройству.

СОХРАНИТЕ ЭТИ ИНСТРУКЦИИ

警告 重要的安全性说明

此警告符号代表危险。您正处于可能受到严重伤害的工作环境中。在您使用设备开始工作之前，必须充分意识到触电的危险，并熟练掌握防止事故发生的标准工作程序。请根据每项警告结尾提供的声明号码来找到此设备的安全性警告说明的翻译文本。

请保存这些安全性说明

警告 安全上の重要な注意事項

「危険」の意味です。人身事故を予防するための注意事項が記述されています。装置の取り扱い作業を行うときは、電気回路の危険性に注意し、一般的な事故防止策に留意してください。警告の各国語版は、各注意事項の番号を基に、装置に付属の「Translated Safety Warnings」を参照してください。

これらの注意事項を保管しておいてください。

주의    중요 안전 지침

이 경고 기호는 위험을 나타냅니다. 작업자가 신체 부상을 일으킬 수 있는 위험한 환경에 있습니다.
장비에 작업을 수행하기 전에 전기 회로와 관련된 위험을 숙지하고 표준 작업 관례를 숙지하여 사고
를 방지하십시오. 각 경고의 마지막 부분에 있는 경고문 번호를 참조하여 이 장치와 함께 제공되는
번역된 안전 경고문에서 해당 번역문을 찾으십시오.

이 지시 사항을 보관하십시오.

Aviso    **INSTRUÇÕES IMPORTANTES DE SEGURANÇA**

**Este símbolo de aviso significa perigo. Você se encontra em uma situação em que há risco de lesões
corporais. Antes de trabalhar com qualquer equipamento, esteja ciente dos riscos que envolvem os
circuitos elétricos e familiarize-se com as práticas padrão de prevenção de acidentes. Use o
número da declaração fornecido ao final de cada aviso para localizar sua tradução nos avisos de
segurança traduzidos que acompanham o dispositivo.**

**GUARDE ESTAS INSTRUÇÕES**

Advarsel    **VIGTIGE SIKKERHEDSANVISNINGER**

**Dette advarselssymbol betyder fare. Du befinder dig i en situation med risiko for
legemesbeskadigelse. Før du begynder arbejde på udstyr, skal du være opmærksom på de
involverede risici, der er ved elektriske kredsløb, og du skal sætte dig ind i standardprocedurer til
undgåelse af ulykker. Brug erklæringsnummeret efter hver advarsel for at finde oversættelsen i de
oversatte advarsler, der fulgte med denne enhed.**

**GEM DISSE ANVISNINGER**

تحذير

إرشادات الأمان الهامة

يوضح رمز التحذير هذا وجود خطر. وهذا يعني أنك متواجد في مكان قد ينتج عنه التعرض لإصابات. قبل بدء العمل،
احذر مخاطر التعرض للصدمات الكهربائية وكن على علم بالإجراءات القياسية للحيلولة دون وقوع أي حوادث. استخدم
رقم البيان الموجود في أخر كل تحذير لتحديد مكان ترجمته داخل تحذيرات الأمان المترجمة التي تأتي مع الجهاز.
قم بحفظ هذه الإرشادات

Upozorenje    VAŽNE SIGURNOSNE NAPOMENE

Ovaj simbol upozorenja predstavlja opasnost. Nalazite se u situaciji koja može prouzročiti
tjelesne ozljede. Prije rada s bilo kojim uređajem, morate razumjeti opasnosti vezane uz
električne sklopove, te biti upoznati sa standardnim načinima izbjegavanja nesreća. U
prevedenim sigurnosnim upozorenjima, priloženima uz uređaj, možete prema broju koji se
nalazi uz pojedino upozorenje pronaći i njegov prijevod.

SAČUVAJTE OVE UPUTE

**Upozornění**    DŮLEŽITÉ BEZPEČNOSTNÍ POKYNY

Tento upozorňující symbol označuje nebezpečí. Jste v situaci, která by mohla způsobit nebezpečí úrazu. Před prací na jakémkoliv vybavení si uvědomte nebezpečí související s elektrickými obvody a seznamte se se standardními opatřeními pro předcházení úrazům. Podle čísla na konci každého upozornění vyhledejte jeho překlad v přeložených bezpečnostních upozorněních, která jsou přiložena k zařízení.

USCHOVEJTE TYTO POKYNY

**Προειδοποίηση**    ΣΗΜΑΝΤΙΚΕΣ ΟΔΗΓΙΕΣ ΑΣΦΑΛΕΙΑΣ

Αυτό το προειδοποιητικό σύμβολο σημαίνει κίνδυνο. Βρίσκεστε σε κατάσταση που μπορεί να προκαλέσει τραυματισμό. Πριν εργαστείτε σε οποιοδήποτε εξοπλισμό, να έχετε υπόψη σας τους κινδύνους που σχετίζονται με τα ηλεκτρικά κυκλώματα και να έχετε εξοικειωθεί με τις συνήθεις πρακτικές για την αποφυγή ατυχημάτων. Χρησιμοποιήστε τον αριθμό δήλωσης που παρέχεται στο τέλος κάθε προειδοποίησης, για να εντοπίσετε τη μετάφρασή της στις μεταφρασμένες προειδοποιήσεις ασφαλείας που συνοδεύουν τη συσκευή.

ΦΥΛΑΞΤΕ ΑΥΤΕΣ ΤΙΣ ΟΔΗΓΙΕΣ

**אזהרה**

**הוראות בטיחות חשובות**

סימן אזהרה זה מסמל סכנה. אתה נמצא במצב העלול לגרום לפציעה. לפני שתעבוד עם ציוד כלשהו, עליך להיות מודע לסכנות הכרוכות במעגלים חשמליים ולהכיר את הנהלים המקובלים למניעת תאונות. השתמש במספר ההוראה המסופק בסופה של כל אזהרה כד לאתר את התרגום באזהרות הבטיחות המתורגמות שמצורפות להתקן.

**שמור הוראות אלה**

**Opomena**    ВАЖНИ БЕЗБЕДНОСНИ НАПАТСТВИЈА

Симболот за предупредување значи опасност. Се наоѓате во ситуација што може да предизвика телесни повреди. Пред да работите со опремата, бидете свесни за ризикот што постои кај електричните кола и треба да ги познавате стандардните постапки за спречување на несреќни случаи. Искористете го бројот на изјавата што се наоѓа на крајот на секое предупредување за да го најдете неговиот период во преведените безбедносни предупредувања што се испорачани со уредот.

ЧУВАЈТЕ ГИ ОВИЕ НАПАТСТВИЈА

| Ostrzeżenie | **WAŻNE INSTRUKCJE DOTYCZĄCE BEZPIECZEŃSTWA** |
|---|---|

**Ten symbol ostrzeżenia oznacza niebezpieczeństwo. Zachodzi sytuacja, która może powodować obrażenia ciała. Przed przystąpieniem do prac przy urządzeniach należy zapoznać się z zagrożeniami związanymi z układami elektrycznymi oraz ze standardowymi środkami zapobiegania wypadkom. Na końcu każdego ostrzeżenia podano numer, na podstawie którego można odszukać tłumaczenie tego ostrzeżenia w dołączonym do urządzenia dokumencie z tłumaczeniami ostrzeżeń.**

**NINIEJSZE INSTRUKCJE NALEŻY ZACHOWAĆ**

| Upozornenie | **DÔLEŽITÉ BEZPEČNOSTNÉ POKYNY** |
|---|---|

**Tento varovný symbol označuje nebezpečenstvo. Nachádzate sa v situácii s nebezpečenstvom úrazu. Pred prácou na akomkoľvek vybavení si uvedomte nebezpečenstvo súvisiace s elektrickými obvodmi a oboznámte sa so štandardnými opatreniami na predchádzanie úrazom. Podľa čísla na konci každého upozornenia vyhľadajte jeho preklad v preložených bezpečnostných upozorneniach, ktoré sú priložené k zariadeniu.**

**USCHOVAJTE SI TENTO NÁVOD**

# Related Publications

These documents provide complete information about the switch and are available from this URL:

http://www.cisco.com/univercd/cc/td/doc/product/lan/c3550/index.htm

You can order printed copies of documents with a DOC-xxxxxx= number from the Cisco.com sites and from the telephone numbers listed in the .

- *Release Notes for the Catalyst 3550 Multilayer Switch* (not orderable but available on Cisco.com)

**Note** Switch requirements and procedures for initial configurations and software upgrades tend to change and therefore appear only in the release notes. Before installing, configuring, or upgrading the switch, see the release notes on Cisco.com for the latest information.

For hardware information about the switch, see these documents:

- *Catalyst 3550 Switch Hardware Installation Guide* (not orderable but available on Cisco.com)
- *Catalyst 3550 Switch Getting Started Guide* (order number DOC-7816575=)
- *Regulatory Compliance and Safety Information for the Catalyst 3550 Switch*
  (order number DOC-7816655 =

For software information for the Catalyst 3550 switches, see these documents:

- *Catalyst 3550 Multilayer Switch Software Configuration Guide* (order number DOC-7811194=)
- *Catalyst 3550 Multilayer Switch Command Reference* (order number DOC-7811195=)
- *Catalyst 3550 Multilayer Switch System Message Guide* (order number DOC-7811196=)

- Device manager online help (available on the switch)

- *Getting Started with Cisco Network Assistant* (not orderable but available on Cisco.com)

- *1000BASE-T Gigabit Interface Converter Installation Note* (not orderable but is available on Cisco.com)

- *Catalyst GigaStack Gigabit Interface Converter Hardware Installation Guide* (order number DOC-786460=)

- *Installation Notes for the CWDM Passive Optical System* (not orderable but available on Cisco.com)

# Obtaining Documentation

Cisco provides several ways to obtain documentation, technical assistance, and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

## Cisco.com

You can access the most current Cisco documentation on the World Wide Web at this URL:

http://www.cisco.com/univercd/home/home.htm

You can access the Cisco website at this URL:

http://www.cisco.com

International Cisco websites can be accessed from this URL:

http://www.cisco.com/public/countries_languages.shtml

## Documentation CD-ROM

Cisco documentation and additional literature are available in a Cisco Documentation CD-ROM package, which may have shipped with your product. The Documentation CD-ROM is updated regularly and may be more current than printed documentation. The CD-ROM package is available as a single unit or through an annual or quarterly subscription.

Registered Cisco.com users can order a single Documentation CD-ROM (product number DOC-CONDOCCD=) through the Cisco Ordering tool:

http://www.cisco.com/en/US/partner/ordering/ordering_place_order_ordering_tool_launch.html

All users can order annual or quarterly subscriptions through the online Subscription Store:

http://www.cisco.com/go/subscription

# Ordering Documentation

You can find instructions for ordering documentation at this URL:

http://www.cisco.com/univercd/cc/td/doc/es_inpck/pdi.htm

You can order Cisco documentation in these ways:

- Registered Cisco.com users (Cisco direct customers) can order Cisco product documentation from the Networking Products MarketPlace:

    http://www.cisco.com/en/US/partner/ordering/index.shtml

- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, USA.) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

# Documentation Feedback

You can submit comments electronically on Cisco.com. On the Cisco Documentation home page, click **Feedback** at the top of the page.

You can send your comments in e-mail to bug-doc@cisco.com.

You can submit comments by using the response card (if present) behind the front cover of your document or by writing to the following address:

Cisco Systems
Attn: Customer Document Ordering
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

# Obtaining Technical Assistance

For all customers, partners, resellers, and distributors who hold valid Cisco service contracts, the Cisco Technical Assistance Center (TAC) provides 24-hour, award-winning technical support services, online and over the phone. Cisco.com features the Cisco TAC website as an online starting point for technical assistance.

# Cisco TAC Website

The Cisco TAC website (http://www.cisco.com/tac) provides online documents and tools for troubleshooting and resolving technical issues with Cisco products and technologies. The Cisco TAC website is available 24 hours a day, 365 days a year.

Accessing all the tools on the Cisco TAC website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a login ID or password, register at this URL:

http://tools.cisco.com/RPF/register/register.do

# Opening a TAC Case

The online TAC Case Open Tool (http://www.cisco.com/tac/caseopen) is the fastest way to open P3 and P4 cases. (Your network is minimally impaired or you require product information). After you describe your situation, the TAC Case Open Tool automatically recommends resources for an immediate solution. If your issue is not resolved using these recommendations, your case will be assigned to a Cisco TAC engineer.

For P1 or P2 cases (your production network is down or severely degraded) or if you do not have Internet access, contact Cisco TAC by telephone. Cisco TAC engineers are assigned immediately to P1 and P2 cases to help keep your business operations running smoothly.

To open a case by telephone, use one of the following numbers:

Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)
EMEA: +32 2 704 55 55
USA: 1 800 553-2447

For a complete listing of Cisco TAC contacts, go to this URL:

http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml

# TAC Case Priority Definitions

To ensure that all cases are reported in a standard format, Cisco has established case priority definitions.

Priority 1 (P1)—Your network is "down" or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

Priority 2 (P2)—Operation of an existing network is severely degraded, or significant aspects of your business operation are negatively affected by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

Priority 3 (P3)—Operational performance of your network is impaired, but most business operations remain functional. You and Cisco will commit resources during normal business hours to restore service to satisfactory levels.

Priority 4 (P4)—You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

# Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- The *Cisco Product Catalog* describes the networking products offered by Cisco Systems, as well as ordering and customer support services. Access the *Cisco Product Catalog* at this URL:

  http://www.cisco.com/en/US/products/products_catalog_links_launch.html

- Cisco Press publishes a wide range of networking publications. Cisco suggests these titles for new and experienced users: Internetworking Terms and Acronyms Dictionary, Internetworking Technology Handbook, Internetworking Troubleshooting Guide, and the Internetworking Design Guide. For current Cisco Press titles and other information, go to Cisco Press online at this URL:

  http://www.ciscopress.com

- Packet magazine is the Cisco quarterly publication that provides the latest networking trends, technology breakthroughs, and Cisco products and solutions to help industry professionals get the most from their networking investment. Included are networking deployment and troubleshooting tips, configuration examples, customer case studies, tutorials and training, certification information, and links to numerous in-depth online resources. You can access Packet magazine at this URL:

  http://www.cisco.com/go/packet

- iQ Magazine is the Cisco bimonthly publication that delivers the latest information about Internet business strategies for executives. You can access iQ Magazine at this URL:

  http://www.cisco.com/go/iqmagazine

- Internet Protocol Journal is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:

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# 1

# Product Overview

The Catalyst 3550 family of multilayer switches—also referred to as the switches—are stackable Ethernet switches to which you can connect workstations, Cisco IP Phones, and other network devices such as servers, routers, and other switches. These switches also can be deployed as backbone switches, aggregating Gigabit Ethernet traffic from other network devices.
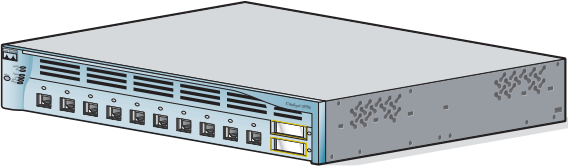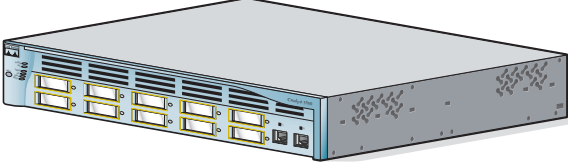
This chapter provides a functional overview of the Catalyst 3550 switch models. These topics are included:

- Features, page 1-1
- Front-Panel Description, page 1-4
- Rear-Panel Description, page 1-10
- Management Options, page 1-11

## Features

Figure 1-1 and Figure 1-2 show the Catalyst 3550 switch models, and Table 1-1 describes the switch features.
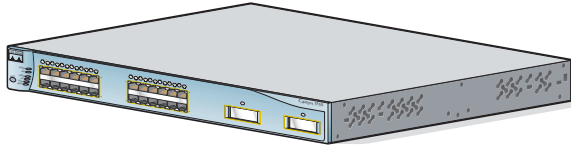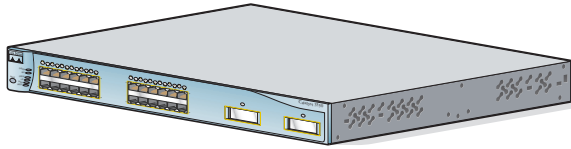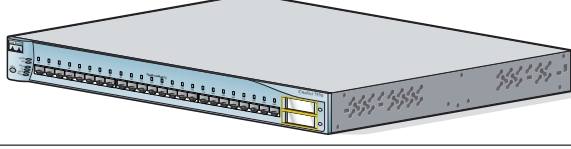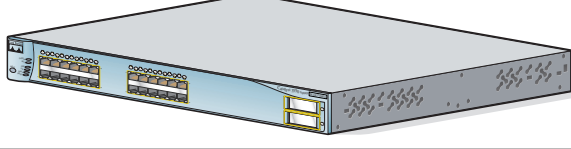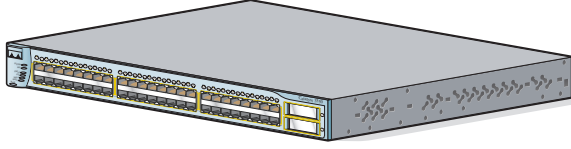
*Figure 1-1  Catalyst 3550-12T and 3550-12G Switch Models*

| Switch | Description | |
|---|---|---|
| WS-C3550-12T | 10 autosensing 10/100/1000 Ethernet ports<br><br>2 GBIC[1]-based Gigabit module slots |  |
| WS-C3550-12G | 2 autosensing 10/100/1000 Ethernet ports<br><br>10 GBIC-based Gigabit module slots |  |

1. GBIC = Gigabit Interface Converter

*Figure 1-2*    *Catalyst 3550-24, 3550-24-DC, 3550-FX, 3550-24PWR, and 3550-48 Switch Models*

| Switch | Description | |
|---|---|---|
| WS-C3550-24-SMI<br>WS-C3550-24-EMI | 24 autosensing 10/100 Ethernet ports<br><br>2 GBIC-based Gigabit module slots | |
| WS-C3550-24-DC-SMI | 24 autosensing 10/100 Ethernet ports<br><br>2 GBIC-based Gigabit module slots<br>DC-input power connector | |
| WS-C3550-24-FX-SMI | 24 100BASE-FX ports<br><br>2 GBIC-based Gigabit module slots | |
| WS-C3550-24PWR-SMI<br>WS-C3550-24PWR-EMI | 24 autosensing 10/100 inline-power Ethernet ports<br><br>2 GBIC-based Gigabit module slots | |
| WS-C3550-48-SMI<br>WS-C3550-48-EMI | 48 autosensing 10/100 Ethernet ports<br><br>2 GBIC-based Gigabit module slots | 81595 |

*Table 1-1    Switch Features*

| Feature | Description |
|---|---|
| Hardware | • 2 or 10 Gigabit Ethernet 10BASE-T/100BASE-TX/1000BASE-T ports and 2 or 10 GBIC[1]-based Gigabit Ethernet slots (Catalyst 3550-12T and 3550-12G switches) |
| | • 24 or 48 10BASE-T/100BASE-TX Ethernet ports and 2 GBIC-based Gigabit Ethernet slots (Catalyst 3550-24, 3550-24DC, 3550-24PWR, and 3550-48 switches) |
| | • 24 100BASE-FX ports (Catalyst 3550-24-FX switch) |
| | • Supports GBIC modules: |
| |    – 1000BASE-SX |
| |    – 1000BASE-LX/LX |
| |    – 1000BASE-ZX |
| |    – 1000BASE-T |
| |    – GigaStack |
| |    – CWDM |
| Configuration | • Supports Layer 3 routing (Catalyst 3550-12T and 3550-12G switches) |
| | • Supports optional Layer 3 routing (Catalyst 3550-24, 3550-24DC, 3550-24-FX, 3550-24PWR, and 3550-48 switches) |
| | • Autonegotiates speed and duplex operation on 10/100 or 10/100/1000 Ethernet ports |
| | • Supports up to 12,000 MAC addresses (Catalyst 3550-12T and 3550-12G switches) |
| | • Supports up to 8,000 MAC addresses (Catalyst 3550-24, 3550-24DC, 3550-24-FX, 3550-24PWR, and 3550-48 switches) |
| | • Checks for errors on a received packet, determines the destination port, stores the packet in shared memory, and then forwards the packet to the destination port |
| Power Redundancy | • Connection for optional Cisco RPS 300 redundant power system or the Cisco RPS 675 redundant power system that operates on AC input and supplies backup DC power to the switch |

***Table 1-1    Switch Features (continued)***

| Feature | Description |
|---|---|
| Inline Power[2] | • Power for Cisco IP Phones and access points from all 10/100 Ethernet ports |
| | • Auto-detection and control of inline power on a per-port basis on all 10/100 ports |
| | • Support for fan-fault and overtemperature detection through the Network Assistant and the device manager. |

1. Gigabit Interface Converter

2. Only Catalyst 3550-24PWR switch

# Front-Panel Description

The switch front panel includes the 10/100 or 10/100/1000 Ethernet ports or 100BASE-FX ports, GBIC module slots, and switch LEDs as shown in Figure 1-3 and described on the following pages.

**Note**    Figure 1-3 shows the Catalyst 3550-12T switch as an example. All the Catalyst switches have similar components.

***Figure 1-3    Switch Front Panel***
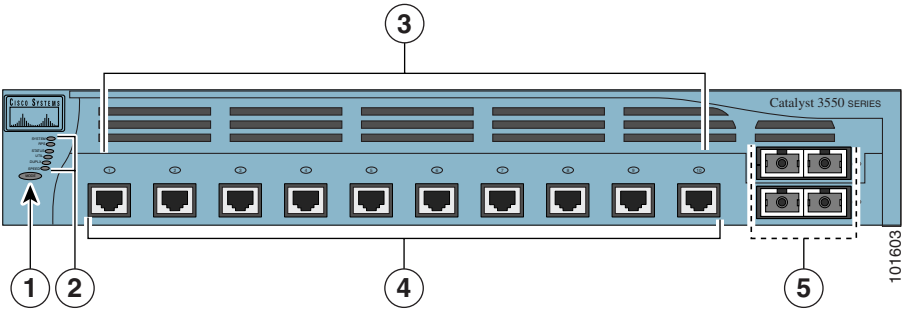


| **1** | Mode button | **4** | 10/100 or 10/100/1000 Ethernet ports or 100BASE-FX ports[1] |
|---|---|---|---|
| **2** | Switch LEDs | **5** | GBIC slots |
| **3** | Port LEDs | | |

1. Port numbering is from left to right, with port 1 on the far left. For ports grouped in pairs, the first member of the pair (port 1) is above the second member (port 2). The GBIC slots are numbered 1 (left) and 2 (right) or 1 (above) and 2 (below).

# 10/100 and 10/100/1000 Ports

The Fast Ethernet (10/100-Mbps) and Gigabit Ethernet (10/100/1000-Mbps) ports use standard RJ-45 connectors and Ethernet pinouts with internal crossovers. The maximum cable length is 328 feet (100 meters). 100BASE-TX and 1000BASE-T traffic requires twisted four-pair Category 5 cable. 10BASE-T traffic can use Category 3 or Category 4 cable.

Fast Ethernet ports operate at 10 or 100 Mbps in either full- or half-duplex mode. In full-duplex mode, two stations can send and receive traffic at the same time. Normally, 10-Mbps ports operate in half-duplex mode, which means that stations can either receive or send traffic.

You can configure interface speed on Fast Ethernet and Gigabit Ethernet ports. On Fast Ethernet ports, you can configure the duplex mode to full, half, or autonegotiate. On Gigabit Ethernet ports, you can configure ports to full-duplex mode or to autonegotiate; half-duplex mode is not supported.

The default setting is autonegotiate. At this setting, the port senses the speed and duplex settings of the attached device and advertises its own capabilities. If the connected device also supports autonegotiation, the switch port negotiates the best connection (that is, the fastest line speed that both devices support and full-duplex transmission if the attached device supports it) and configures itself accordingly.

# 10/100 Inline Power Ports

The 10/100 ports on the Catalyst 3550-24PWR switch provide protocol support for Cisco IP Phones and Cisco Aironet Access Points:

- Provide –48 VDC power to all Cisco IP Phones and Cisco Aironet Access Points
- Automatically detect a Cisco IP Phone or an access point that is connected

On a per-port basis, you can control whether or not a Catalyst 3550-24PWR 10/100 port automatically provides power when an IP phone or an access point is connected. There are two inline power settings for each 10/100 port: **Auto** and **Never**. When you select the **Auto** setting for inline power on a port, the port only provides power if an IP phone or an access point is connected to it. The **Auto** setting is the default. However, when you select the **Never** setting for inline power on a port, the port does not provide power even if a Cisco IP phone or an access point is connected to it.

# 100BASE-FX Ports

The 100BASE-FX ports use 50/125- or 62.5/125-micron multimode fiber-optic cabling. In full-duplex mode, the cable length from a switch to an attached device cannot exceed 6,562 feet (2 kilometers).

The 100BASE-FX ports operate only at 100 Mbps in either full- or half-duplex mode and do not support autonegotiation. The half-duplex mode is the default setting.

You can connect a 100BASE-FX port to an SC or ST port on a target device by using one of the MT-RJ fiber-optic patch cables listed in Table B-1 on page B-2.

# GBIC Module Slots

You cannot configure speed or duplex mode on GBIC slots, but for certain types of GBICs, you can configure speed to not negotiate (**nonegotiate**) if connected to a device that does not support autonegotiation.

The GBIC module slots support these modules to provide flexibility in media and distance options:

- 1000BASE-T GBIC module for copper connections of up to 328 feet (100 meters).

- 1000BASE-SX GBIC module for fiber-optic connections of up to 1,804 feet (550 meters) multimode only.

- 1000BASE-LX/LH GBIC module for fiber-optic connections of up to 32,810 feet (10 kilometers) single mode or 1,804 feet (550 meters) multimode.

- 1000BASE-ZX GBIC module for fiber-optic connections of up to 328,000 feet (100 kilometers) single mode only.

- GigaStack GBIC module for creating a 1-Gbps stack configuration of up to nine supported switches. The GigaStack GBIC supports one full-duplex link (in a point-to-point configuration) or up to nine half-duplex links (in a stack configuration) to other Gigabit Ethernet devices. When you use the required Cisco proprietary signaling and cabling, the maximum distance for a GigaStack GBIC-to-GigaStack GBIC connection is 3 feet (1 meter).

- Coarse Wave Division Multiplexing (CWDM) GBIC modules for fiber-optic connections of up to 393,719 feet (120 kilometers) single mode only.

  Cisco-approved CWDM GBIC modules have a serial EEPROM that contains the module serial number, the vendor name and vendor ID, a unique security code, and cyclic redundancy check (CRC). When a CWDM GBIC module is inserted in the switch, the switch software reads the EEPROM to check the serial number, vendor name and vendor ID, and recompute the security code and CRC. If the serial number, the vendor name or vendor ID, the security code, or CRC is invalid, the switch places the port in an error-disabled state.

For more information about GBICs, see the documentation included with your GBIC module and Related Publications, page xiii, for a list of related documentation.

# LEDs

You can use the switch LEDs to monitor switch activity and its performance. Figure 1-3 shows the LEDs and the Mode button that you use to select one of the port modes.

All of the LEDs described in this section except the utilization meter (UTIL) are visible on the device manager and through the Network Assistant.

## System LED

The system LED shows whether the system is receiving power and is functioning properly. Table 1-2 lists the LED colors and their meanings.

*Table 1-2    System LED*

| Color | System Status |
| --- | --- |
| Off | System is not powered on. |

*Table 1-2    System LED (continued)*

| Color | System Status |
|-------|---------------|
| Green | System is operating normally. |
| Amber | System is receiving power but is not functioning properly. |

## RPS LED

The RPS LED shows the RPS status. Table 1-3 lists the LED colors and their meanings.

*Table 1-3    RPS LED*

| Color | RPS Status |
|-------|------------|
| Off | RPS is off or not properly connected. |
| Solid green | RPS is connected and ready to provide back-up power, if required. |
| Blinking green | RPS is connected but is unavailable because it is providing power to another device (redundancy has been allocated to a neighboring device). |
| Solid amber | The RPS is in standby mode or in a fault condition. Press the Standby/Active button on the RPS, and the LED should turn green. If it does not, the RPS fan could have failed. Contact Cisco Systems. |
| Blinking amber | The internal power supply in a switch has failed, and the RPS is providing power to the switch (redundancy has been allocated to this device). |

For more information about the Cisco RPS 300 or the Cisco RPS 675, see the documentation included with the RPS.

## Port LEDs and Modes

Each RJ-45 port and GBIC module slot has a port LED. These port LEDs, as a group or individually, display information about the switch and about the individual ports. The port mode determines the type of information displayed through the port LEDs. Table 1-4 lists the mode LEDs and their associated port modes and meanings.

To select or change a mode, press the Mode button (or Mode label on the Catalyst 3550-48 switch) until the desired mode is highlighted. When you change port modes, the meanings of the port LED colors also change. Table 1-5 explains how to interpret the port LED colors in different port modes.

You can also use the Mode button to activate the Express Setup program or to clear the switch IP address and all switch settings. See the "Clearing the Switch IP Address and Configuration" section on page 3-1 for more information.

*Table 1-4    Port Mode LEDs*

| Mode LED | Port Mode | Description |
|----------|-----------|-------------|
| STATUS | Port status | The port status. This is the default mode. |
| UTIL[1] | Switch utilization | The current bandwidth in use by the switch. (See Figure 1-4 through Figure 1-8.) |
| DUPLX | Port duplex mode | The port duplex mode: full duplex or half duplex. |

*Table 1-4    Port Mode LEDs (continued)*

| Mode LED | Port Mode | Description |
|---|---|---|
| SPEED | Port speed | The port operating speed: 10, 100, or 1000 Mbps. |
| LINE PWR[2] | Port inline power | The inline power status: on or off. |

1.  Not available on Catalyst 3550-24PWR switches

2.  Available only on Catalyst 3550-24PWR switches

*Table 1-5    Meaning of LED Colors in Different Modes*

| Port Mode | LED Color | Meaning |
|---|---|---|
| STATUS (port status) | Off | No link, or port was administratively shut down. |
| | Solid green | Link present. |
| | Blinking green | Activity. Port is sending or receiving data. |
| | Alternating green-amber | Link fault. Error frames can affect connectivity, and errors such as excessive collisions, CRC errors, and alignment and jabber errors are monitored for a link-fault indication. |
| | Solid amber | Port is blocked by Spanning Tree Protocol (STP) and is not forwarding data. **Note** After a port is reconfigured, the port LED can remain amber for up to 30 seconds as STP checks the switch for possible loops. |
| | Blinking amber | Port is blocked by STP and is sending or receiving packets. |
| UTIL[1] (utilization) | Green | Port LEDs display backplane utilization on a logarithmic scale. (See Figure 1-4 through Figure 1-8.) |
| | Amber | Peak total backplane utilization over the last 24 hours. |
| DUPLX (duplex) | Off | Port is operating in half duplex. |
| | Green | Port is operating in full duplex. |
| SPEED | **10/100 and 10/100/1000 ports** | |
| | Off | Port is operating at 10 Mbps. |
| | Green | Port is operating at 100 Mbps. |
| | Blinking green | Port is operating at 1000 Mbps. |
| | **GBIC ports** | |
| | Off | Port is not operating. |
| | Blinking green | Port is operating at 1000 Mbps. |
| LINE PWR[2] | Off | Inline power is off. |
| | Green | Inline power is on. If the Cisco IP Phone is receiving power from an AC power source, the port LED is off even if the IP phone is connected to the switch port. The LED turns green only when the switch port is providing power. |

1.  Not available on Catalyst 3550-24PWR switches

2.  Available only on Catalyst 3550-24PWR switches

## Bandwidth Utilization

The UTIL mode on the switch shows the current bandwidth in use by the switch. (See Figure 1-4 to Figure 1-8.) If all possible port LEDs are green, bandwidth utilization is in the 50 to 100 percent range. Every port LED that is off (black) divides this range by two.

> **Note** The port LEDs on the Catalyst 3550-24PWR switch do not show bandwidth utilization.

Figure 1-4 shows the bandwidth utilization percentages displayed by the LEDs on the Catalyst 3550-12T switch.

*Figure 1-4    Bandwidth Utilization for the Catalyst 3550-12T*
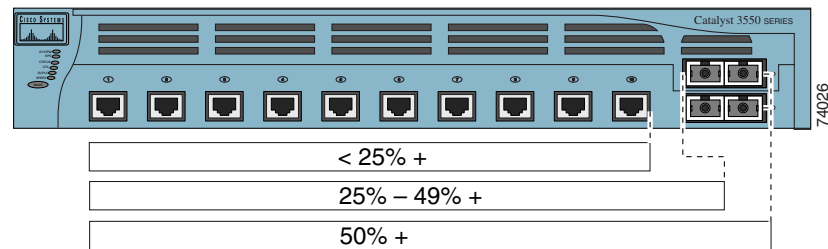


Figure 1-5 shows the bandwidth utilization percentages displayed by the LEDs on the Catalyst 3550-12G switch.

*Figure 1-5    Bandwidth Utilization for the Catalyst 3550-12G*



Figure 1-6 shows the bandwidth utilization percentages displayed by the LEDs on the Catalyst 3550-24 and 3550-24-DC switches.

*Figure 1-6    Bandwidth Utilization for the Catalyst 3550-24 and 3550-24-DC*
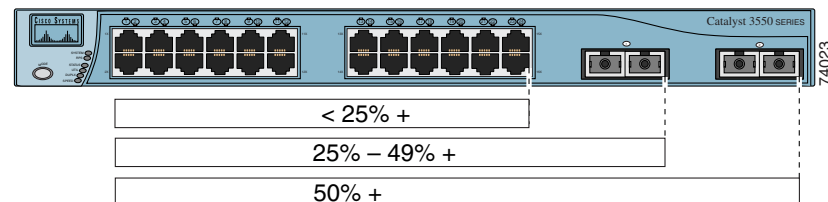


Figure 1-7 shows the bandwidth utilization percentages displayed by the LEDs on the Catalyst 3550-48 switch.

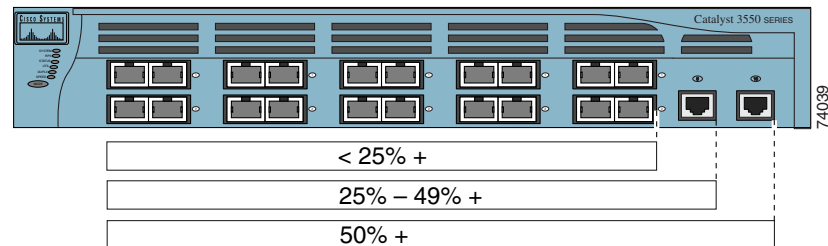*Figure 1-7    Bandwidth Utilization for the Catalyst 3550-48*
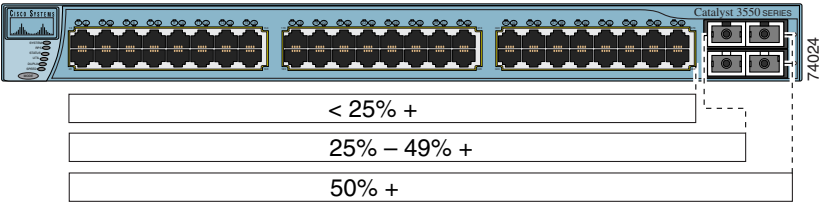


Figure 1-8 shows the bandwidth utilization percentages displayed by the LEDs on the Catalyst 3550-24-FX switch.

*Figure 1-8    Bandwidth Utilization for the Catalyst 3550-24-FX*
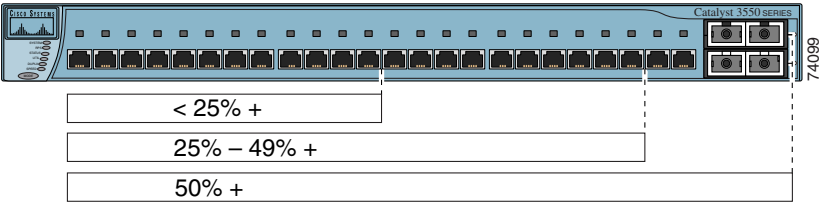


# Rear-Panel Description

Other than the Catalyst 3550-24-DC switch, the switch rear panels have an AC power connector, an RPS connector, and an RJ-45 console port, which are shown in Figure 1-9 and described in this section.

The rear panel of the 3550-24-DC switch has a DC power connector (also referred to as the terminal block header), an RJ-45 console port, and a ground lug. The switch is shipped with a terminal block plug in the DC power connector.

**Note**    Figure 1-9 shows the Catalyst 3550-12T switch as an example. All the Catalyst switches have similar components.

*Figure 1-9    Switch Rear Panel*
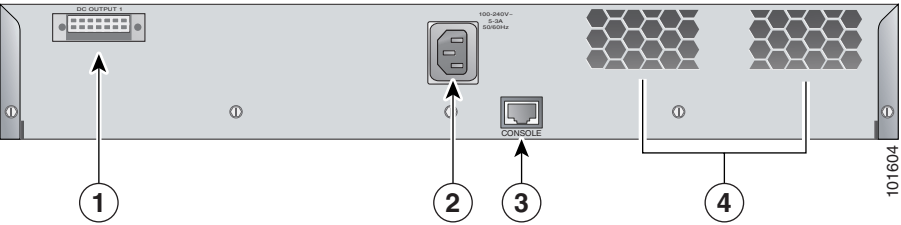


| 1 | RPS connector | 3 | Console port |
|---|---|---|---|
| 2 | AC power connector | 4 | Fan exhaust |

# AC Power Connector

For AC-powered switches, the internal power supply is an autoranging unit that supports input voltages between 100 and 240 VAC.

For the Catalyst 2440-24-DC power information, see Appendix C, "DC Power Connections."

# Cisco RPS Connector

For protection against a power supply failure, you can connect a Cisco RPS to the switch. The Cisco RPS can support six external network devices and provide power to one failed device at a time. It automatically senses when the internal power supply of a connected device fails and provides power to the failed device, preventing loss of network traffic.

The Cisco RPS 300 has two output levels: –48 V and 12 V with a total maximum output power of 300 W. The Cisco RPS 675 has two output levels: –48 V and 12 V with a total maximum output power of 675 W.

These Cisco RPS models support the Catalyst 3550 switches:

- Cisco RPS 300 (model PWR300-AC-RPS-N1) supports the
  Catalyst 3550-12T, 3550-12G, 3550-24, 3550-FX, and 3550-48 switches.
- Cisco RPS 675 (model PWR675-AC-RPS-N1) supports the
  Catalyst 3550-12T, 3550-12G, 3550-24, 3550-FX, 3550-24PWR, and 3550-48 switches.

The Cisco RPS 300 does not support the Catalyst 3550-24-DC or 3550-24PWR switch. The Cisco RPS 675 does not support the Catalyst 3550-24-DC switch.

The RPS 300 and RPS 675 models also support other Cisco devices. See the RPS documentation for more information.

# Console Port

You can connect the switch to a PC by using the console port and the supplied RJ-45-to-DB-9 adapter cable. If you want to connect the switch console port to a terminal, you need to provide an RJ-45-to-DB-25 female DTE adapter. You can order a kit (part number ACS-DSBUASYN=) containing that adapter from Cisco.

# Management Options

The Catalyst 3550 switches offer several management options:

- Network Assistant
- The Network Assistant is a GUI-based application that you can install and run on your desktop; you do not need a web browser to run it. You can use Network Assistant to manage and monitor switch clusters or standalone devices. For more information, see the *Getting Started with Cisco Network Assistant* guide and the Network Assistant online help.

- Device manager

    You can use the device manager, which is in the switch memory, to manage individual and standalone switches. The device manager is accessible after you have run the Express Setup program (see the getting started guide for more information about running Express Setup). Use the device manager to perform basic switch configuration and monitoring. You can access the device manager from anywhere in your network through a web browser.

    To launch the device manager, enter the switch IP address in the web browser, and press **Enter**. The device manager page appears.

    See the device manager online help for more information.

- Cisco IOS command-line interface (CLI)

    The switch CLI is based on Cisco IOS software and is enhanced to support desktop-switching features. You can fully configure and monitor the switch and switch cluster members from the CLI. You can access the CLI either by connecting your management station directly to the switch console port or by using Telnet from a remote management station. See the command reference on Cisco.com for more information.

- SmartPort Macros

    SmartPort macros provide a convenient way to save and share common switch configurations. You can use SmartPort macros to enable features and settings based on the location of a switch in the network and for mass configuration deployments across the network.

    Cisco provides a collection of pretested, Cisco-recommended baseline SmartPort macros for Catalyst switches. You can use the macros to build and deploy Cisco-recommended network designs and configurations. For more information about SmartPort macros, see the software configuration guide and the SmartPort information available on Cisco.com.

- CiscoView application

    The CiscoView device-management application displays the switch image that you can use to set configuration parameters and to view switch status and performance information. The CiscoView application, which you purchase separately, can be a standalone application or part of an SNMP platform. See the CiscoView documentation for more information.

- SNMP network management

    You can manage switches from a SNMP-compatible management station that is running platforms such as HP OpenView or SunNet Manager. The switch supports a comprehensive set of MIB extensions and four Remote Monitoring (RMON) groups. See the software configuration guide on Cisco.com and the documentation that came with your SNMP application for more information.

- Cisco Intelligence Engine 2100 (IE2100)

    Cisco IE200 Series Configuration Registrar is a network management device that works with embedded Cisco Networking Services (CNS) agents in the switch software. You can automate initial configurations and configuration updates by generating switch-specific configuration changes, sending them to the switch, executing the configuration change, and logging the results.

# Network Configurations

See the software configuration guide on Cisco.com for network configuration concepts and examples.

# Switch Installation

This chapter describes how to prepare for installation, how to install the switch, and how to make connections to it. Read the topics and perform the procedures in the order that they are presented:

- Preparing for Installation, page 2-1
- Installing the Switch, page 2-5
- Installing the Optional Ground Kit, page 2-15
- Powering the Switch and Connecting Devices, page 2-16

## Preparing for Installation

This section covers these topics:

- Warnings, page 2-1
- Site Requirements, page 2-4
- Verifying Package Contents, page 2-4

### Warnings

These warnings are translated into several languages in the *Regulatory Compliance and Safety Information for the Catalyst 3550 Switch.*

⚠️
**Warning**    **Only trained and qualified personnel should be allowed to install, replace, or service this equipment.** Statement 1030

⚠️
**Warning**    **Read the installation instructions before connecting the system to the power source.** Statement 1004

⚠️
**Warning**    **For connections outside the building where the equipment is installed, the following ports must be connected through an approved network termination unit with integral circuit protection: 10/100 Ethernet.** Statement 1044

**Warning**     **Installation of the equipment must comply with local and national electrical codes.** Statement 1074

**Warning**     **Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals.** Statement 43

**Warning**     **Do not stack the chassis on any other equipment. If the chassis falls, it can cause severe bodily injury and equipment damage.** Statement 48

**Warning**     **The plug-socket combination must be accessible at all times because it serves as the main disconnecting device.** Statement 66

**Warning**     **This equipment is intended to be grounded. Ensure that the host is connected to earth ground during normal use.** Statement 39

**Warning**     **To prevent the switch from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of 113°F (45°C). To prevent airflow restriction, allow at least 3 inches (7.6 cm) of clearance around the ventilation openings.** Statement 17B

**Warning**     **When installing or replacing the unit, the ground connection must always be made first and disconnected last.** Statement 1046

**Warning**     **Do not work on the system or connect or disconnect cables during periods of lightning activity.** Statement 1001

**Warning**     **Ultimate disposal of this product should be handled according to all national laws and regulations.** Statement 1040

**Warning**     **If a redundant power system (RPS) is not connected to the switch, install an RPS connector cover on the back of the switch.** Statement 265

**Warning**     **To comply with safety regulations, mount switches on a wall with the front panel facing up.** Statement 266

**Warning**    **The Catalyst 3550-24-DC contains no field-replaceable units (FRUs). Do not open the chassis or attempt to remove or replace any components. For information about obtaining service for this unit, contact your reseller or Cisco sales representative.** Statement 121B

**Warning**    **This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security.** Statement 1017

**Warning**    **Ethernet cables must be shielded when used in a central office environment.** Statement 171

**Warning**    **Before performing any of the following procedures, ensure that power is removed from the DC circuit.** Statement 1003

**Warning**    **Class 1 laser product.** Statement 1008

**Warning**    **An exposed wire lead from a DC-input power source can conduct harmful levels of electricity. Be sure that no exposed portion of the DC-input power source wire extends from the terminal block plug.** Statement 122

**Warning**    **Voltages that present a shock hazard can exist on inline power circuits if interconnections are made by using uninsulated exposed metal contacts, conductors, or terminals. Avoid using such interconnection methods unless the exposed metal parts are in a restricted access location and users and service people who are authorized to access the location are made aware of the hazard. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security.** Statement 1072

**Warning**    **Attach only the Cisco RPS (model PWR300-AC-RPS-N1) to the RPS receptacle.** Statement 100B

**Warning**    **Attach only the Cisco RPS (model PWR675-AC-RPS-N1) to the RPS receptacle.** Statement 100C

# Site Requirements

When determining where to place the switch, be sure to observe these requirements:

- Operating environment is within the ranges listed in Appendix A, "Technical Specifications."
- Clearance to front and rear panels is such that
  - Front-panel indicators can be easily read.
  - Access to ports is sufficient for unrestricted cabling.
  - Rear-panel power connector is within reach of an AC power receptacle.
- Airflow around the switch and through the vents is unrestricted.
- Temperature around the unit does not exceed 113° F (45° C).

> **Note**   If the switch is installed in a closed or multirack assembly, the temperature around it might be greater than normal room temperature.

- Cabling is away from sources of electrical noise, such as radios, power lines, and fluorescent lighting fixtures. Make sure that the cabling is safely away from other devices that might damage the cables.
- For sites requiring compliance to Telcordia GR-1089-CORE Intra-building Lightning requirements, all 10/100 and 10/100/1000 ports must be connected with shielded cable grounded at both ends.

# Verifying Package Contents

> **Note**   Carefully remove the contents from the shipping container, and check each item for damage. If any item is missing or damaged, contact your Cisco representative or reseller for support. Return all packing material to the shipping container, and save it.

The switch is shipped with these items:

- This *Catalyst 3550 Series Hardware Installation Guide*
- *Where to Find the Catalyst 3550 Documentation* flyer
- Product registration card
- AC power cord (AC-powered switches)
- One RJ-45-to-DB-9 adapter cable
- Mounting kit containing:
  - Four rubber feet for mounting the switch on a table
  - Two 19-inch rack-mounting brackets
  - Four Phillips flat-head screws for attaching the brackets to the switch (Catalyst 3550-12T and 3550-12G switches)
  - Six Phillips flat-head screws for attaching the brackets to the switch (Catalyst 3550-24, 3550-24-DC, 3550-24-FX, 3550-24PWR, and 3550-48 switches)
  - Four Phillips machine screws for attaching the brackets to a rack

- One cable guide and one black Phillips machine screw for attaching the cable guide to one of the mounting brackets

- One RPS connector cover (for wall mounting)

- Two Phillips pan-head screws (for attaching the RPS cover)

- Four Phillips truss-head screws (for wall-mounting brackets)

- One DC terminal block plug (also called a terminal block header; only Catalyst 3550-24-DC switches)

# Installing the Switch

This section describes these installation procedures:

# Rack-Mounting

⚠️

**Warning**    **To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:**

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.

- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.

- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack. Statement 1006

To install the switch in a 19-inch or 24-inch rack (24-inch racks require optional mounting hardware), follow the instructions described in these procedures:

✎

**Note**    Installing the switch in a 24-inch rack requires an optional bracket kit not included with the switch. You can order a kit containing the 24-inch rack-mounting brackets and hardware from Cisco. For the Catalyst 3550-12T and 3550-12G switches, order part number RCKMNT-3550-1.5RU=. For the Catalyst 3550-24, 3550-24-DC, 3550-24-FX, 3550-24PWR, and 3550-48 switches, order part number RCKMNT-1RU=.

## Attaching Brackets to the Catalyst 3550-12T and 3550-12G Switches

The bracket orientation and the brackets that you use depend on whether you are attaching the brackets for a 19-inch or a 24-inch rack. For 19-inch racks, use bracket part number 700-11523-01; for 24-inch racks, use bracket part number 700-12398-01. Figure 2-1 through Figure 2-6 show how to attach each type bracket to one side of the switch. Follow the same steps to attach the second bracket to the opposite side.

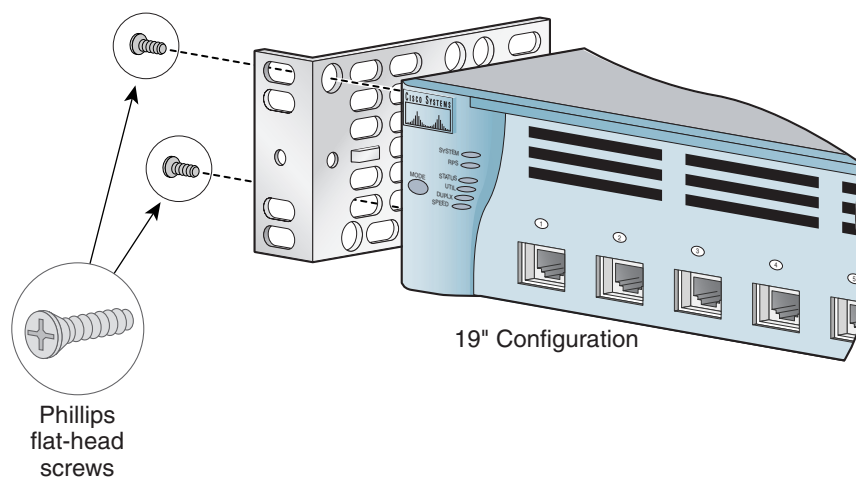*Figure 2-1    Attaching Brackets for 19-Inch Racks, Front Panel Forward*



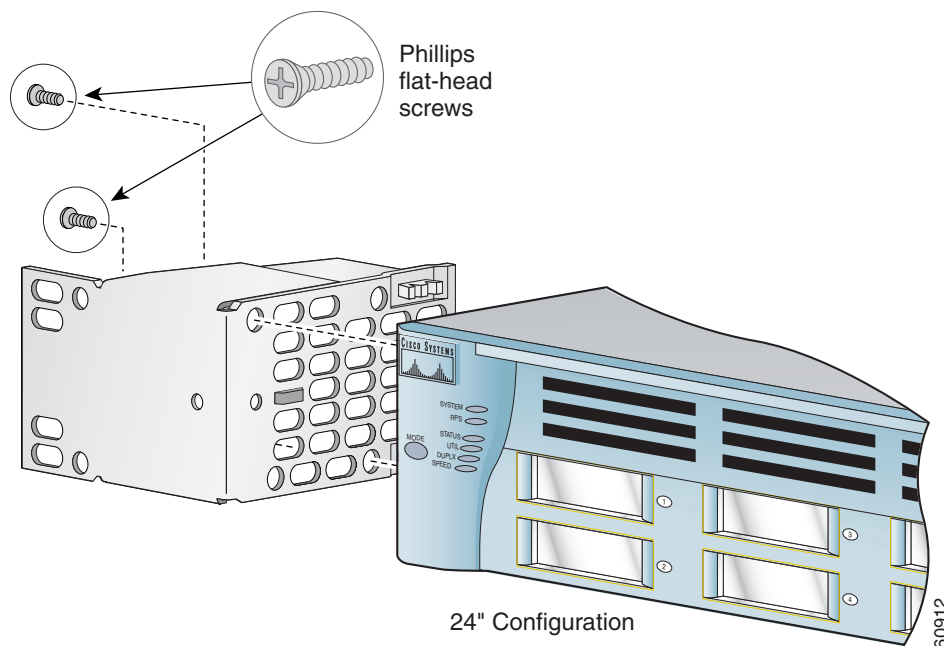*Figure 2-2    Attaching Brackets for 24-Inch Racks, Front Panel Forward*

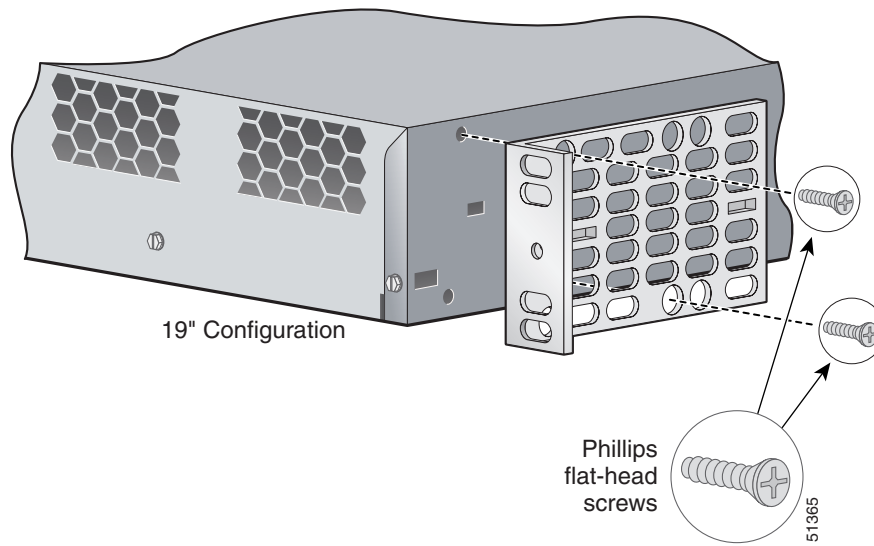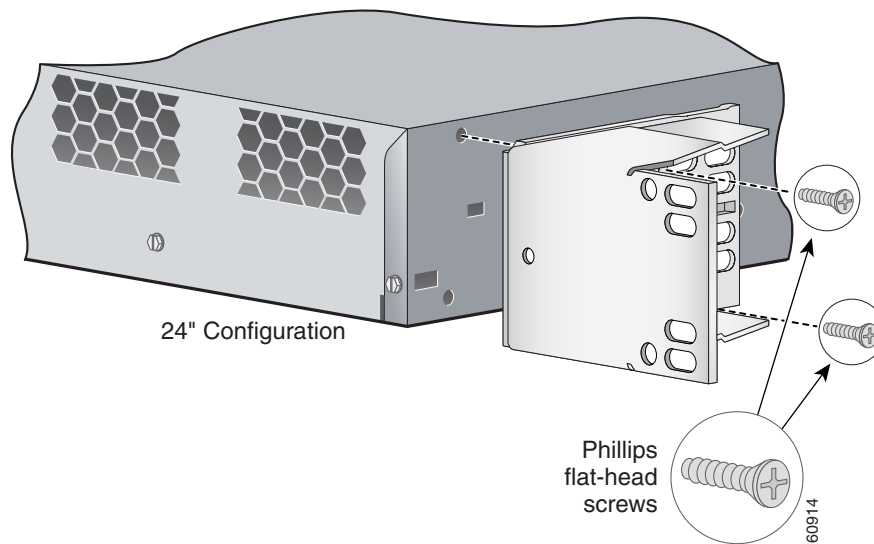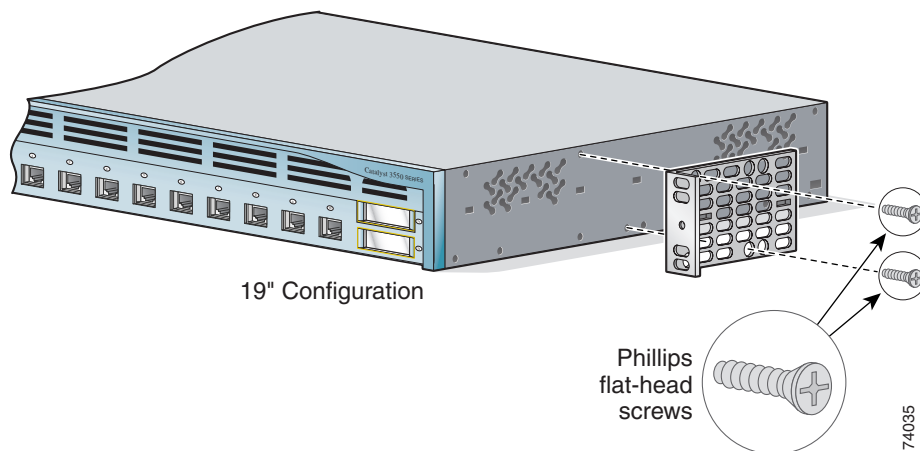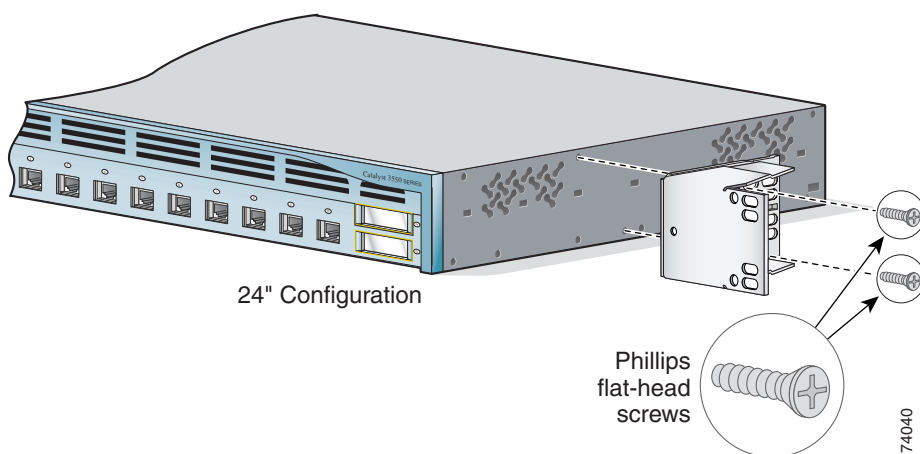*Figure 2-3    Attaching Brackets for 19-Inch Racks, Rear Panel Forward*



19" Configuration

Phillips
flat-head
screws

51365

*Figure 2-4    Attaching Brackets for 24-Inch Racks, Rear Panel Forward*



24" Configuration

Phillips
flat-head
screws

60914

*Figure 2-5    Attaching Brackets for 19-Inch Telco Racks*



19" Configuration

Phillips
flat-head
screws

74035

*Figure 2-6    Attaching Brackets for 24-Inch Telco Racks*



24" Configuration

Phillips
flat-head
screws

74040

## Attaching Brackets to the Catalyst 3550-24, 3550-24-DC, 3550-24-FX, 3550-24PWR, and 3550-48 Switches

The bracket orientation and the brackets that you use depend on whether you are attaching the brackets for a 19-inch or a 24-inch rack. For 19-inch racks, use bracket part number 700-8209-01; for 24-inch racks, use bracket part number 700-13248-01. Figure 2-7 through Figure 2-12 show how to attach each type bracket to one side of the switch. Follow the same steps to attach the second bracket to the opposite side.

**Note**    Before you attach the brackets on the Catalyst 3550-24-FX switch, remove the screws that are on the bottom-front of the chassis. Attach the bracket by using the supplied Phillips flat-head screws, as shown in Figure 2-7.
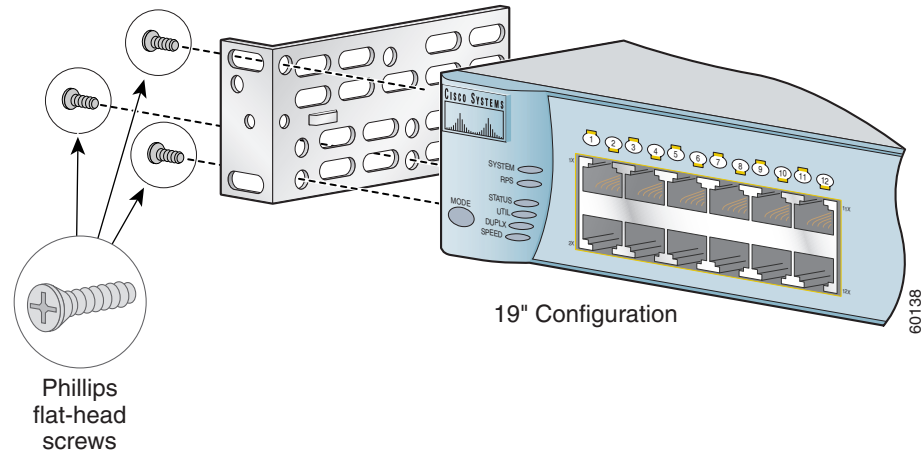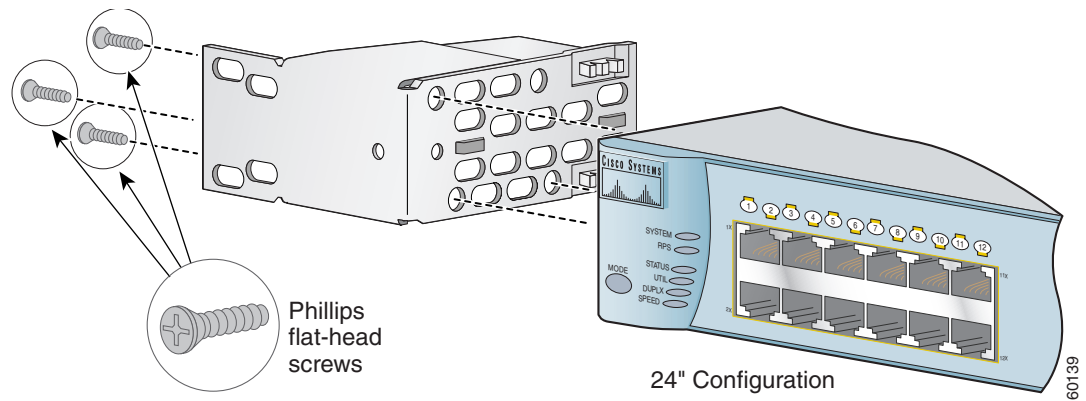
*Figure 2-7    Attaching Brackets for 19-Inch Racks, Front Panel Forward*



Phillips
flat-head
screws

19" Configuration

60138

*Figure 2-8    Attaching Brackets for 24-Inch Racks, Front Panel Forward*



Phillips
flat-head
screws

24" Configuration

60139

*Figure 2-9    Attaching Brackets for 19-Inch Racks, Rear Panel Forward*



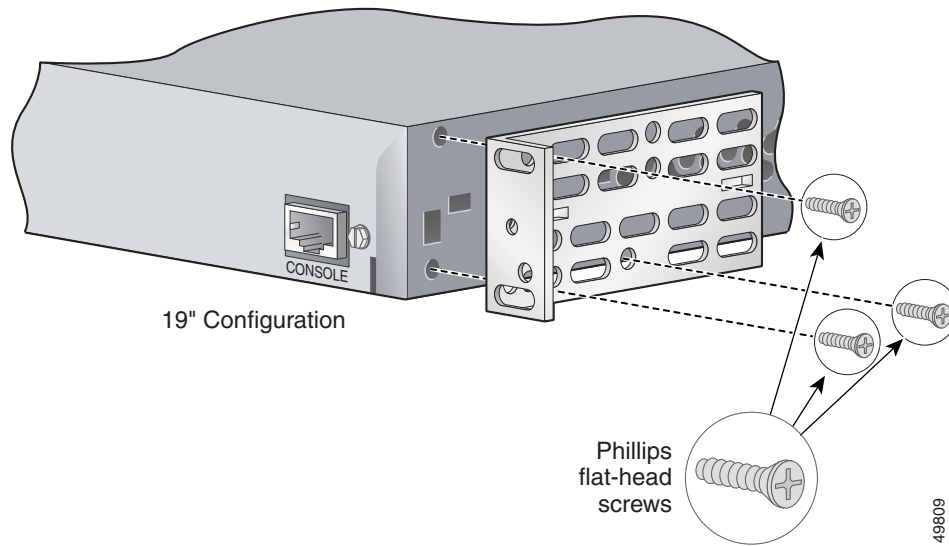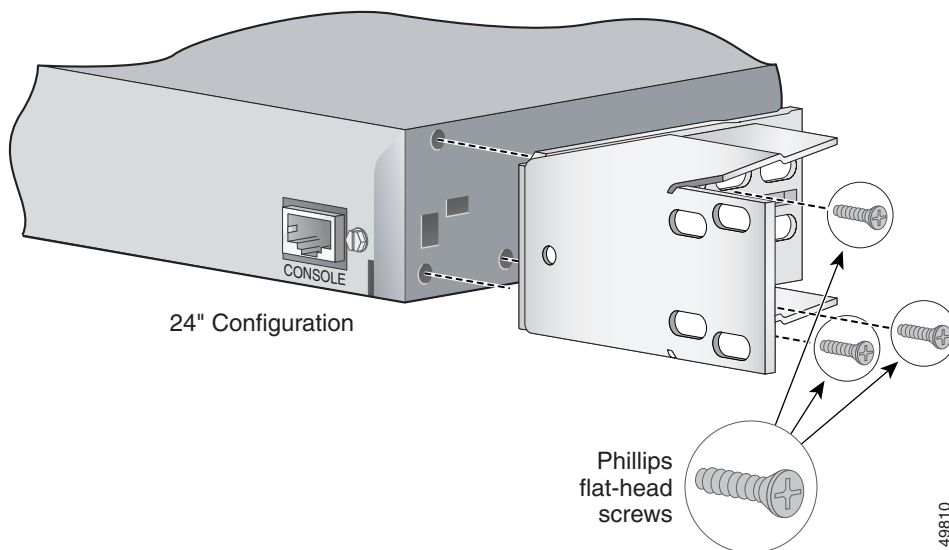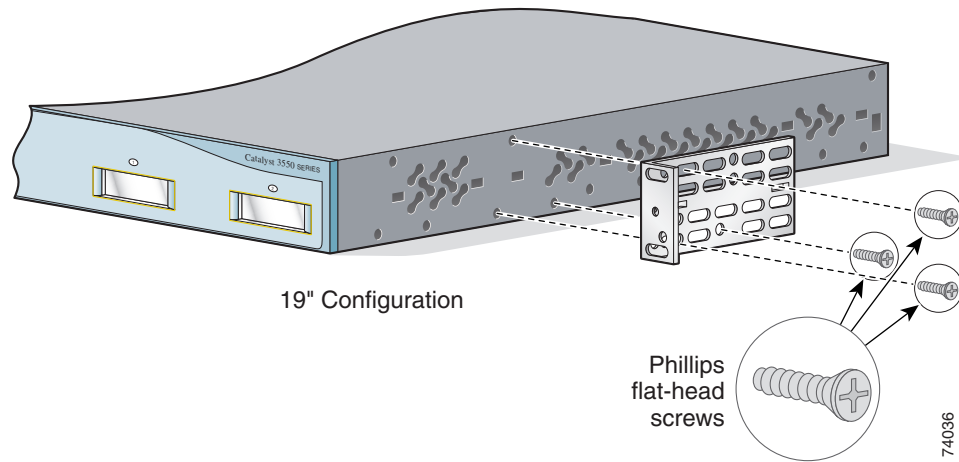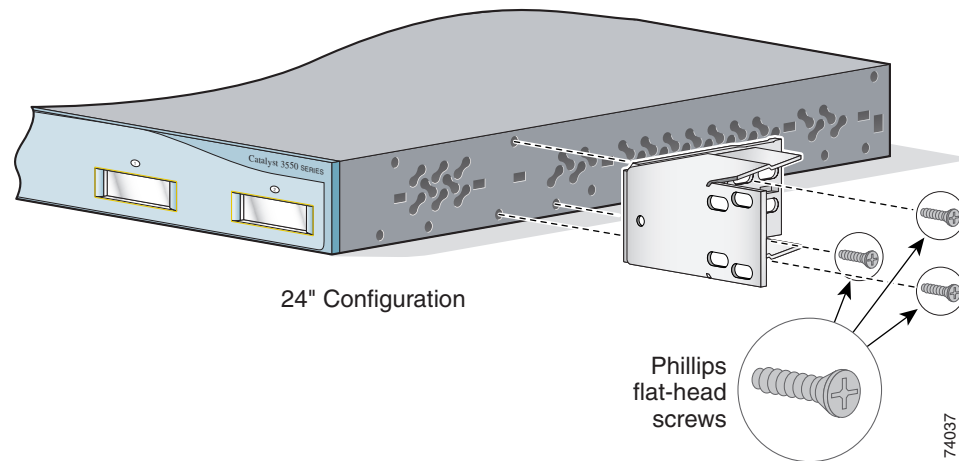*Figure 2-10    Attaching Brackets for 24-Inch Racks, Rear Panel Forward*

*Figure 2-11   Attaching Brackets for 19-Inch Telco Racks*



19" Configuration

Phillips
flat-head
screws

74036

*Figure 2-12   Attaching Brackets for 24-Inch Telco Racks*



24" Configuration

Phillips
flat-head
screws

74037

## Mounting the Switch in a Rack

After the brackets are attached to the switch, use the four supplied number-12 Phillips machine screws to securely attach the brackets to the rack, as shown in Figure 2-13.

*Figure 2-13   Mounting the Switch in a Rack*



Phillips machine screws
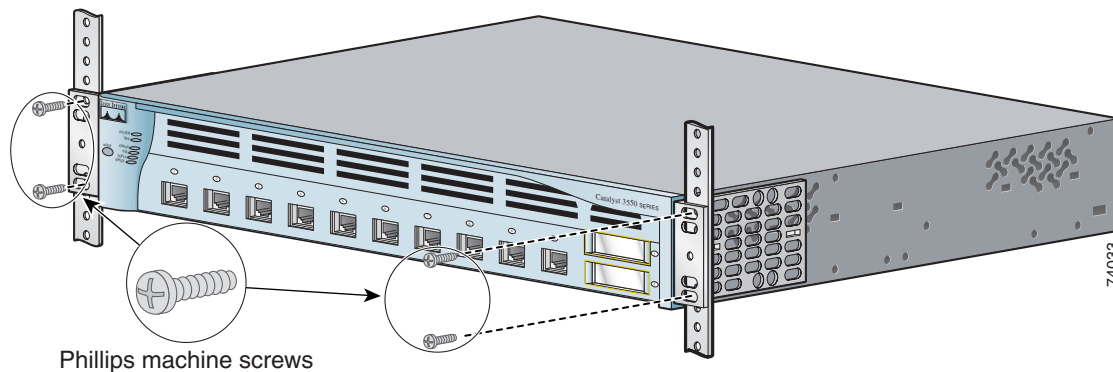
We recommend attaching the cable guide to prevent the cables from obscuring the front panel of the switch and the other devices installed in the rack. Use the supplied black screw, as shown in Figure 2-14, to attach the cable guide to the left or right bracket.

*Figure 2-14   Attaching the Cable Guide on the Switch*



Cable guide screw
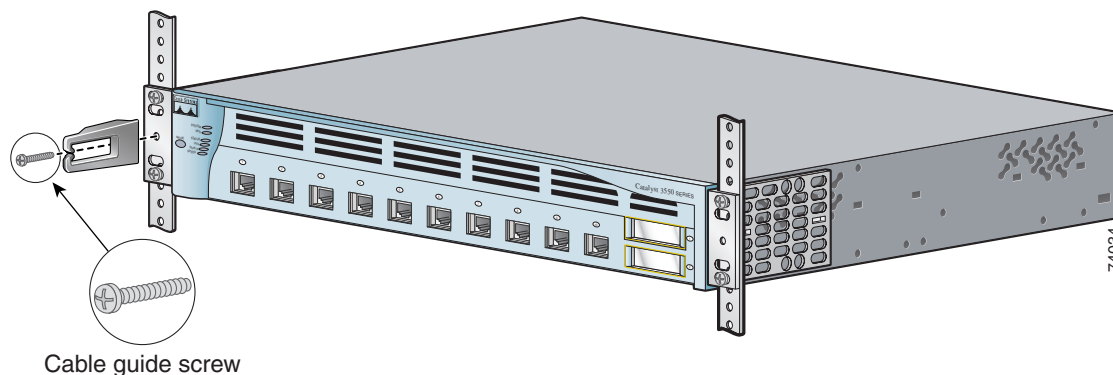
# Wall Mounting

To install the switch on a wall, follow the instructions in these procedures:

- Attaching the Brackets to the Switch, page 2-13
- Attaching the RPS Connector Cover, page 2-13
- Mounting the Switch on a Wall, page 2-14

**Note**    The illustrations in this section show the Catalyst 3550-12T switch as an example. All the Catalyst 3550 switches are wall-mounted following the same procedures.
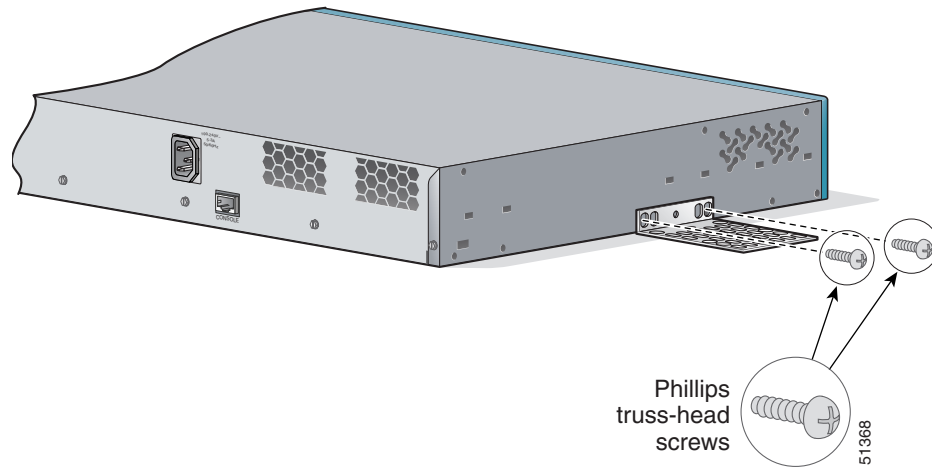
## Attaching the Brackets to the Switch

Figure 2-15 shows how to attach a 19-inch bracket to one side of the switch. Follow the same steps to attach the second bracket to the opposite side.

✎

**Note**    On the Catalyst 3550-24-FX switch, remove the screws that are in the side of the chassis before you attach the brackets.

*Figure 2-15    Attaching the 19-Inch Brackets for Wall Mounting*



Phillips truss-head screws

51368

## Attaching the RPS Connector Cover

If you are not using an RPS with your switch, use the two Phillips pan-head screws to attach the RPS connector cover to the back of the switch, as shown in Figure 2-16.

⚠

**Warning**    **If an RPS is not connected to the switch, install an RPS connector cover on the back of the switch.** Statement 265

*Figure 2-16    Attaching the RPS Connector Cover on the Switch*



Phillips pan-head screws

RPS connector cover

RPS connector

86483
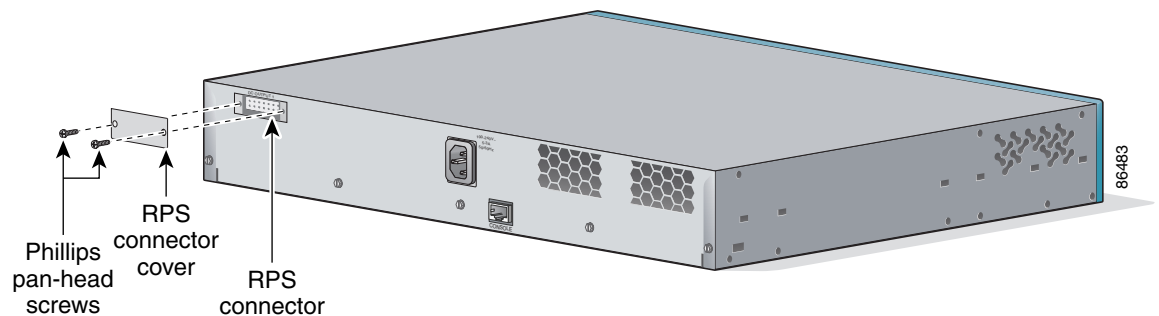
## Mounting the Switch on a Wall

For the best support of the switch and cables, make sure that the switch is attached securely to wall studs or to a firmly attached plywood mounting backboard. Mount the switch with the front panel facing up, as shown in Figure 2-17.

⚠

**Warning**    **To comply with safety regulations, mount the switches on a wall with the front panel facing up.** Statement 266

*Figure 2-17   Mounting the Switch on a Wall*



User-supplied screws
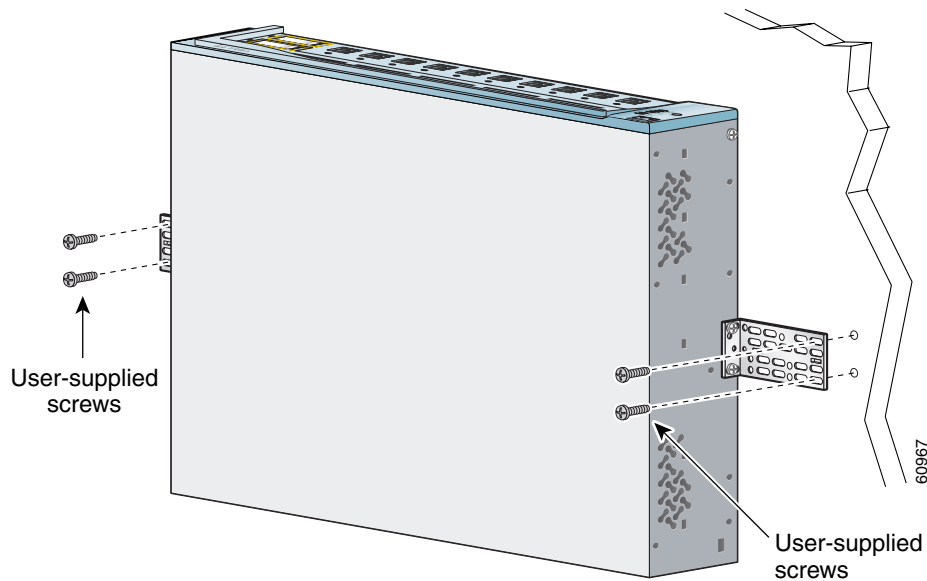
User-supplied screws

60967

## Table or Shelf Mounting

Follow these steps to install the switch on a table or shelf:

**Step 1**    Locate the adhesive strip with the rubber feet in the mounting-kit envelope. Attach the four rubber feet to the recessed areas on the bottom of the unit.

**Step 2**    Place the switch on the table or shelf near an AC power source.

# Installing the Optional Ground Kit

For switches that require a two-hole lug for grounding, you can order a kit containing the ground lug and hardware from Cisco. For the Catalyst 3550-12G, 3550-24, and 3550-24-FX switches, order part number NEBS-LUG-3550=.

> **Note** When you install the ground-lug kit, you cannot connect an RPS to the switch.

To install the ground lug, you need these tools and equipment:

- Ratcheting torque screwdriver with a Phillips head that exerts up to 15 pound-force inches (lbf-in.) or 240 ounce-force inches (ozf-in.) of pressure
- Panduit crimping tool with optional controlled-cycle mechanism (model CT-700, CT-720, CT-920, CT-920CH, CT-930, or CT-940CH)
- 6-gauge copper ground wire (insulated or noninsulated)
- Wire-stripping tool for stripping 6-gauge wires

> **Note** The illustrations in this section show the Catalyst 3550-12T switch as an example. Follow the same procedure to install the ground lug on the Catalyst 3550-24 and 3550-24-FX switches.

To ground the switch to earth ground, follow these steps. Make sure to follow any grounding requirements at your site.

**Step 1** Use the two Phillips pan-head screws to attach the RPS connector cover to the back of the switch as shown in Figure 2-16.

**Step 2** If your ground wire is insulated, use a wire stripping tool to strip the 6-gauge ground wire to 0.5 inch (12.7 mm) ± 0.02 inch (0.5 mm). (See Figure C-1 on page C-2.)

**Step 3** Slide the open end of the ground lug over the exposed area of the 6-gauge wire.

**Step 4** Using a Panduit crimping tool, crimp the ground lug to the 6-gauge wire. (See Figure C-2 on page C-3.)

**Step 5** Use the two number-10-32 screws to attach the ground lug and wire assembly to the switch rear panel RPS connector cover, as shown in Figure 2-18.

**Step 6**   Using a ratcheting torque screwdriver, torque each ground-lug screw to 15 lbf-in. (240 ozf-in.)

*Figure 2-18   Torquing Ground-Lug Screws on the Switch*



Torque to 15 lbf-in.
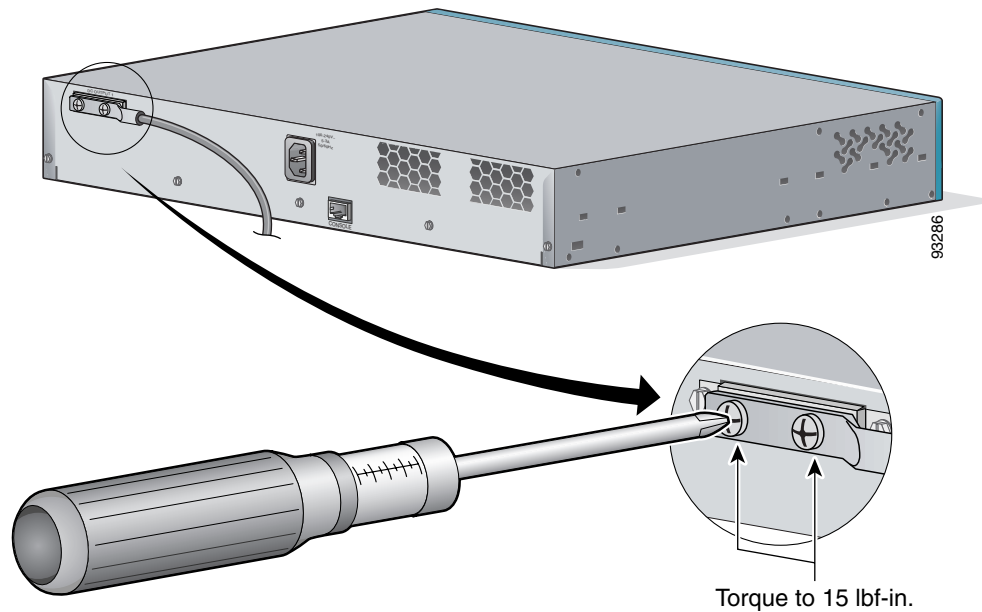
# Powering the Switch and Connecting Devices

These sections describe powering the switch, connecting an RPS, connecting cables, and inserting GBICs.

## Powering the Switch

Use the supplied AC power cord to connect the AC power socket on the switch rear panel to an AC power outlet.

When the switch powers on, it automatically begins the power-on self-test (POST), a series of tests that verifies that the switch functions properly. When POST completes, the system LED is green. If the switch fails POST, the system LED is amber, and the port LED associated with the particular test is amber.

If POST fails, see Chapter 3, "Troubleshooting," to determine a course of action.

# Connecting a Cisco RPS

Use the cable supplied with the RPS to connect to the switch rear panel. Connect the switch and the RPS to the same AC power source. Always put the RPS in standby mode when you connect devices to it and in active mode during normal operation.

> **Note** Make sure to connect the switch and the RPS to the same AC power source.

You can connect the Cisco RPS 300 (model PWR300-AC-RPS-N1) to these switch models:

- Catalyst 3550-12T, 3550-12G, 3550-24, 3550-FX, or 3550-48 switch. (The Cisco RPS 300 does not support the Catalyst 3550-24-DC or 3550-24PWR switch.)

> **Warning** **Attach only the Cisco RPS (model PWR300-AC-RPS-N1) to the RPS receptacle.** Statement 100B

You can connect the Cisco RPS 675 (model PWR675-AC-RPS-N1) to these switch models.

- Catalyst 3550-12T, 3550-12G, 3550-24, 3550-FX, 3550-24PWR, or 3550-48 switch. (The Cisco RPS 675 does not support the Catalyst 3550-24-DC switch.)

> **Warning** **Attach only the Cisco RPS (model PWR675-AC-RPS-N1) to the RPS receptacle.** Statement 100C

# Connecting to the 10/100 and 10/100/1000 Ports

> **Caution** To prevent ESD damage, follow your normal board and component handling procedures when connecting to the Ethernet ports.

Use the guidelines in Table 2-1 to select the correct cable for connecting the switch 10/100 and 10/100/1000 ports to other devices. See the "Cable and Adapter Specifications" section on page B-3 for cable-pinout descriptions.

*Table 2-1    Recommended Ethernet Cables*

| Device | Crossover Cable[1] | Straight-Through Cable[1] |
|---|---|---|
| Switch to switch | Yes | No |
| Switch to hub | Yes | No |
| Switch to computer or server | No | Yes |
| Switch to router | No | Yes |
| Switch to IP phone | No | Yes |

1. 100BASE-TX and 1000BASE-T traffic requires twisted four-pair, Category 5 cable. 10BASE-T traffic can use Category 3 or Category 4 cable.

The switch 10/100 and 10/100/1000 port default setting is autonegotiate. If the attached device does not support autonegotiation, you can explicitly set the speed and duplex parameters. After connecting the cable, the port LED turns green when both the switch and the connected device have established a link.

# Connecting to the 10/100 Inline Power Ports

You can connect the Catalyst 3550-24PWR switch to a Cisco IP Phone through a straight-through, twisted four-pair Category 5 cable. The rear panel of the Cisco IP Phone might have more than one RJ-45 connector. Use the LAN-to-phone connector to connect the IP phone to the Catalyst 3550-24PWR switch.

You can configure the 10/100 ports on the Catalyst 3550-24PWR switch to either automatically provide inline power when a Cisco IP Phone or a Cisco Aironet Access Point is connected or to never provide inline power even if an IP phone or an access point is connected. The default setting is **Auto**.

⚠ **Warning**     **Voltages that present a shock hazard can exist on inline power circuits if interconnections are made by using uninsulated exposed metal contacts, conductors, or terminals. Avoid using such interconnection methods unless the exposed metal parts are in a restricted access location and users and service people who are authorized to access the location are made aware of the hazard. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security.** Statement 1072

⚠ **Caution**     It takes a Catalyst 3550-24PWR 10/100 port up to 10 seconds to initially detect, power up, and link to a Cisco IP Phone. If you disconnect the Cisco IP Phone before link is established, you must wait 10 seconds before connecting another network device (other than another IP phone) to that switch port. Failure to do so can result in damage to that network device.

You also can connect the Cisco IP Phone or Cisco Aironet Access Point to a Catalyst 3550-24PWR 10/100 port and to an AC power source for redundant power. The power source to which the external device is first connected becomes its primary power source, and the second power source is its backup. If the primary source fails, the second power source becomes the primary power source to the device. During the power transfer, the device might reboot or reestablish link with the switch.

For information about Cisco IP Phones and Cisco Aironet Access Points, see the documentation that came with your IP phone or access point.

# Connecting to 100BASE-FX Ports

⚠ **Caution**     To prevent ESD damage, follow your normal board and component handling procedures when connecting to the 100BASE-FX ports.

The 100BASE-FX ports operate only at 100 Mbps and support both full- and half-duplex mode. The half-duplex mode is the default setting. Autonegotiation is not supported.

To connect to a 100BASE-FX port, remove the rubber plug from the port and the rubber cap from the MT-RJ patch cable. Store for future use. Insert the cable in the port, and insert the other cable end in an SC or ST connector on the target device. The port LED turns green when both the switch and the connected device have established a link.

⚠️

**Caution**    Do not remove the rubber plugs from the fiber-optic ports or the rubber caps from the fiber-optic cable until you are ready to connect the cable. The plugs and caps protect the fiber-optic ports and cables from contamination and ambient light.

You can connect a 100BASE-FX port to an SC or ST connector on a compatible device by using one of the MT-RJ fiber-optic patch cables listed in Table B-1 on page B-2.

# Installing GBIC Modules

See the release notes for the latest list of approved Gigabit Interface Converter (GBIC) modules and to your GBIC documentation for more information about installation, cabling, and configuring. See Related Publications, page xiii, for a list of related documentation.

# Troubleshooting

This chapter describes these troubleshooting topics:

- Understanding POST Results, page 3-1
- Clearing the Switch IP Address and Configuration, page 3-1
- Diagnosing Problems, page 3-2

## Understanding POST Results

While the switch powers on, it automatically begins POST, a series of tests that verifies that the switch functions properly. POST lasts approximately 1 minute. When the switch begins POST, the port LEDs turn green, the system LED blinks green, the RPS LED turns off, and then the first two port LEDs turn off. When POST completes, the port LEDs return to the status mode display, and the system LED is green. If POST fails, the system LED is amber, and the port LED associated with the test is amber.

If POST fails, the SYST LED turns amber. Table 3-1 on page 3-3 lists causes and resolutions for a POST failure. POST failures are usually fatal. Contact your Cisco representative if your switch does not pass POST.

**Note** The LEDs on a Catalyst 3550-24PWR switch function differently during POST. Use the console port to view the POST results.

## Clearing the Switch IP Address and Configuration

If you have configured a new switch with a wrong IP address, or if all the switch LEDs start blinking when you are trying to enter Express Setup mode, you can clear the IP address that is configured on the switch.

**Note** This procedure clears the IP address and all configuration information stored on the switch. Do not follow this procedure unless you want to completely reconfigure the switch.

To clear the IP address and the switch configuration information, follow these steps:

**Step 1** Press and hold the Mode button.

The switch LEDs begin blinking after about 2 seconds.

> **Note**  If the switch is not configured, the LEDs are all green. You can omit Step 2 and run Express Setup to configure the switch.

**Step 2**  Continue holding down the Mode button. The LEDs stop blinking after 8 additional seconds, and then the switch reboots.

---

The switch now behaves like an unconfigured switch. You can configure the switch by using Express Setup as described in the getting started guide. You can also configure the switch by using the command-line interface (CLI) setup procedure described in Appendix D, "Configuring the Switch with the CLI-Based Setup Program."

# Diagnosing Problems

The LEDs on the front panel provide troubleshooting information about the switch. They show POST failures, port-connectivity problems, and overall switch performance. For a full description of the switch LEDs, see the "LEDs" section on page 1-6.

You can also get statistics from the browser interface, from the CLI, or from an SNMP workstation. See the software configuration guide and the switch command reference guide on Cisco.com or the documentation that came with your SNMP application for details.

You can access the Cisco Technical Support website for a list of known hardware problems and extensive troubleshooting documentation:

- Field notices
- Security advisories
- Troubleshooting resources
- Factory defaults
- Password recovery
- Recovery from corrupted or missing software
- Switch port problems
- Network interface cards
- Troubleshooting tools

Table 3-1 describes some common problems and their solutions.

*Table 3-1    Common Problems and Solutions*

| Problem | Solution |
|---|---|
| System LED is not on, and the switch does not run POST. | • Check that the power cable is connected to the switch and to a known power source.<br>• Test the power cable on another switch.<br>• Connect a working power cable from another switch. |
| System LED is amber. | • An internal fan fault is detected. Either check the switch itself, or use the **show env** user EXEC command to check for a failed fan.<br>• The switch might be overheating. Use the **show env** user EXEC command to check for an overtemperature condition. If there is an overtemperature condition:<br>  – Place the switch in an environment that meets the environmental requirements given in Appendix A, "Technical Specifications."<br>  – Make sure that the fan intake and exhaust areas are clear.<br>• A fatal POST error is detected. See the "Understanding POST Results" section on page 3-1. |

*Table 3-1     Common Problems and Solutions (continued)*

| Problem | Solution |
|---------|----------|
| No connectivity | • Verify that the devices at both ends of the link are connected and powered.<br><br>• Verify that the autonegotiation settings are the same at both ends.<br><br>• Verify that you are using the appropriate Ethernet cable for the connected device. See Table 2-1 on page 2-17 for cabling requirements.<br><br>• Verify that the cable is good by testing it on another device. Replace it with a known working cable.<br><br>• STP might be checking for possible loops. Wait 30 seconds for the port LED to turn green.<br><br>• For 1000BASE-T connections, make sure to use a twisted four-pair, Category 5 cable.<br><br>• The switch is not recognizing a GBIC module. See the "GBIC Module Slots" section on page 1-6 for Cisco-recommended GBIC modules, and see your GBIC module documentation for more information. |
| Poor performance or excessive errors | • There might be a speed and duplex autonegotiation mismatch. Use the **show controllers ethernet-controller** privileged EXEC command to display per-port send and receive statistics read from the hardware. You can also use the **show interfaces** privileged EXEC command to display the administrative and operational status of all ports or a specified port.<br><br>• The cabling distance might be exceeded. Reduce the cable length to within the distances listed in the "Front-Panel Description" section on page 1-4. |

# Technical Specifications

This appendix lists the switch technical specifications in Table A-1 to Table A-5.

*Table A-1   Switch Environmental and Physical Specifications*

| **Environmental Ranges** | |
|---|---|
| Operating temperature | 32 to 113° F (0 to 45° C) |
| Storage temperature | –13 to 158° F (–25 to 70° C) |
| Relative humidity | 10 to 85% (noncondensing) |
| Operating altitude | Up to 10,000 ft (3049 m) |
| Storage altitude | Up to 15,000 ft (4573 m) |
| **Physical Specifications** | |
| Weight | Catalyst 3550-12T and 3550-12G: 16 lb (7.26 kg) |
| | Catalyst 3550-24: 11 lb (5 kg) |
| | Catalyst 3550-24-DC and 3550-24-FX: 10.5 lb (4.8 kg) |
| | Catalyst 3550-24PWR: 14 lb (6.35 kg) |
| | Catalyst 3550-48: 13 lb (5.9 kg) |
| **Physical Specifications** | |
| Dimensions (H x D x W) | Catalyst 3550-12T and 3550-12G: 2.63 x 15.9 x 17.5 in. (6.68 x 40.39 x 44.45 cm) |
| | Catalyst 3550-24 and 3550-24-DC: 1.75 x 14.4 x 17.5 in. (4.45 x 36.58 x 44.45 cm) |
| | Catalyst 3550-24-FX and 3550-48: 1.75 x 16.25 x 17.5 in. (4.45 x 41.28 x 44.45 cm) |
| | Catalyst 3550-24PWR: 1.73 x 17.35 x 17.5 in. (4.4 x 44 x 44 cm) |

*Table A-2    Power Requirements for the Catalyst 3550-12T, 3550-12G, 3550-24, 3550-24-FX, and 3550-48 Switches*

| **Power Requirements** | |
| --- | --- |
| AC input voltage | Catalyst 3550-12T and 3550-12G:<br>100 to 127/200 to 240 VAC (autoranging)<br>2 A/1 A, 50 to 60 Hz<br><br>Catalyst 3550-24, 3550-24-FX, and 3550-48:<br>100 to 127/200 to 240 VAC (autoranging)<br>1.6 A/0.9 A, 50 to 60 Hz |
| DC input voltages for RPS 300 | Catalyst 3550-12T and 3550-12G: ⎓+12 V⎓@13 A<br>Catalyst 3550-24: ⎓+12 V⎓@8.5 A<br>Catalyst 3550-24-FX: ⎓+12 V⎓@8.5 A<br>Catalyst 3550-48: ⎓+12 V⎓@13 A |
| **Power Requirements** | |
| DC input voltages for RPS 675 | ⎓+12 V⎓@25 A |
| Power consumption | Catalyst 3550-12T and 3550-12G: 190 W, 650 Btus per hour<br>Catalyst 3550-24: 65 W, 222 Btus per hour<br>Catalyst 3550-24-FX: 85 W, 290 Btus per hour<br>Catalyst 3550-48: 110 W, 375 Btus per hour |

*Table A-3    Power Requirements for the Catalyst 3550-24PWR Switch*

| **Power Requirements** | |
| --- | --- |
| AC input voltage | 100 to 127 / 200 to 240 VAC (autoranging)<br>5.5 A / 2.8 A, 50 to 60 Hz |
| DC input voltages for RPS 300 | ⎓+12 V@7.5 A, ⎓–48 V@7.8 A |
| DC input voltages for RPS 675 | ⎓+12 V⎓@25 A, ⎓–48 V@7.8 A |
| Power consumption | 525 W, 1790 Btus per hour |

*Table A-4    Power Requirements for the Catalyst 3550-24-DC*

| **Power Requirements** | |
| --- | --- |
| Power consumption | 55 W, 190 Btus per hour |
| DC input voltage | –36 to –72 VDC |
| DC input voltages for RPS 675 | ⎓+12 V⎓@13 A |
| Wire gauge for power connection | 18 AWG (6 AWG for protective earth) |
| Branch circuit protection | 5 A |

*Table A-5      Fiber-Port Specifications for Catalyst 3550-24-FX Switches*

| Fiber-Port Power Levels | |
|---|---|
| Optical transmitter wavelength | 1300 nm[1] |
| Optical receiver sensitivity for 50/125-micron cabling | –33.5 to –11.8 dBm[2] |
| Optical receiver sensitivity for 62.5/125-micron cabling | –33.5 to –11.8 dBm |
| Optical transmitter power for 50/125-micron cabling | –23.5 to –14 dBm |
| Optical transmitter power for 62.5/125-micron cabling | –20 to –14 dBm |

1.   nm = nanometers

2.   dBm = decibel milliwatt

# Connector and Cable Specifications

This appendix describes the Catalyst 3550 switch ports and the cables and adapters that you use to connect the switch to other devices.

## Connector Specifications

These sections describe the connectors used with the Catalyst 3550 switches.
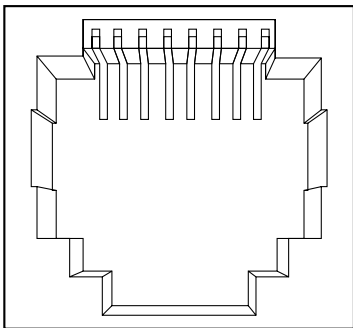
### 10/100 and 10/100 /1000 Ports

The 10/100 and 10/100/1000 Ethernet ports on Catalyst 3550 switches use standard RJ-45 connectors and Ethernet pinouts with internal crossovers. Figure B-2 and Figure B-1 show the pinouts.

*Figure B-1    10/100 Port Pinouts*

| Pin | Label | 1 2 3 4 5 6 7 8 |
|-----|-------|-----------------|
| 1 | RD+ | |
| 2 | RD- | |
| 3 | TD+ | |
| 4 | NC | |
| 5 | NC | |
| 6 | TD- | |
| 7 | NC | |
| 8 | NC | |

H5318

*Figure B-2    10/100/1000 Port Pinouts*

| Pin | Label | 1 2 3 4 5 6 7 8 |
|-----|-------|------------------|
| 1 | TP0+ | |
| 2 | TP0- | |
| 3 | TP1+ | |
| 4 | TP2+ | |
| 5 | TP2- | |
| 6 | TP1- | |
| 7 | TP3+ | |
| 8 | TP3- | |

# 100BASE-FX Ports

The 100BASE-FX ports use MT-RJ connectors, as shown in Figure B-3. The 100BASE-FX ports use 50/125- or 62.5/125-micron multimode fiber-optic cabling.

You can connect a 100BASE-FX port to an SC or ST port on a target device by using one of the MT-RJ fiber-optic patch cables listed in Table B-1. Use the Cisco part numbers in Table B-1 to order the patch cables that you need.

*Figure B-3    MT-RJ Connector*
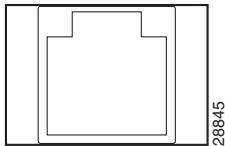
*Table B-1    MT-RJ Patch Cables for 100BASE-FX Connections*

| Type | Cisco Part Number |
|------|-------------------|
| 1-meter, MT-RJ-to-SC multimode cable | CAB-MTRJ-SC-MM-1M |
| 3-meter, MT-RJ-to-SC multimode cable | CAB-MTRJ-SC-MM-3M |
| 5-meter, MT-RJ-to-SC multimode cable | CAB-MTRJ-SC-MM-5M |
| 1-meter, MT-RJ-to-ST multimode cable | CAB-MTRJ-ST-MM-1M |
| 3-meter, MT-RJ-to-ST multimode cable | CAB-MTRJ-ST-MM-3M |
| 5-meter, MT-RJ-to-ST multimode cable | CAB-MTRJ-ST-MM-5M |

# Console Port

The console port uses an 8-pin RJ-45 connector, described in Table B-2 and Table B-3. The supplied RJ-45-to-DB-9 adapter cable is used to connect the console port of the switch to a console PC. For console port and adapter pinout information, see Table B-2 and Table B-3.

# Cable and Adapter Specifications

These sections describe the cables and adapters used with the Catalyst 3550 switches.

## Two Twisted-Pair Cable Pinouts

Figure B-4 and Figure B-5 show the schematics of two twisted-pair cables for ports running 10 Mbps traffic.

*Figure B-4    Two Twisted-Pair Straight-Through Cable Schematic*
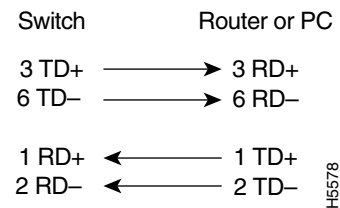


*Figure B-5    Two Twisted-Pair Crossover Cable Schematic*
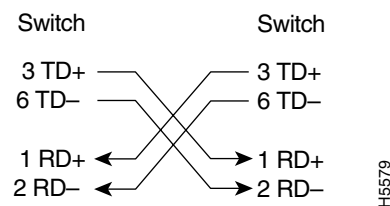


## Four Twisted-Pair Cable Pinouts for 10/100 Ports

Figure B-6 and Figure B-7 show the schematics of four twisted-pair cables for ports running 10 or 100 Mbps traffic.

For inline power connections, signal pairs are used to provide inline power. Nominally, there is 48 V between the pin pairs (1–2), and pairs (3–6) when inline power is active.

*Figure B-6    Four Twisted-Pair Straight-Through Cable Schematic for 10/100 Ports*
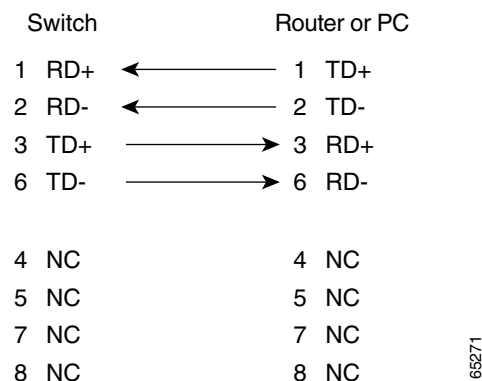
*Figure B-7    Four Twisted-Pair Crossover Cable Schematic for 10/100 Ports*

Switch                    Switch

1  RD+                    1  RD+
2  RD-                    2  RD-
3  TD+                    3  TD+
6  TD-                    6  TD-

4  NC                     4  NC
5  NC                     5  NC
7  NC                     7  NC
8  NC                     8  NC

65273
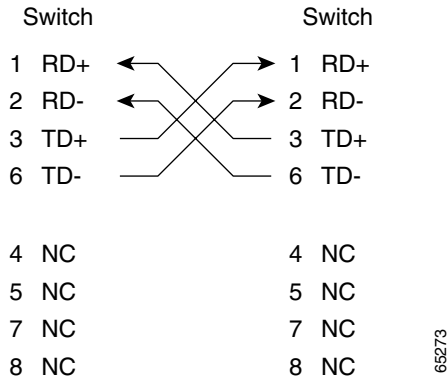
# Four Twisted-Pair Cable Pinouts for 1000BASE-T Ports

Figure B-8 and Figure B-9 show the schematics of four twisted-pair cables for ports running 1000 Mbps traffic.

*Figure B-8    Four Twisted-Pair Straight-Through Cable Schematic for 1000BASE-T Ports*

Switch                    Router or PC

1  TPO+                   1  TP1+
2  TPO-                   2  TP1-
3  TP1+                   3  TPO+
6  TP1-                   6  TPO-

4  TP2+                   4  TP3+
5  TP2-                   5  TP3-
7  TP3+                   7  TP2+
8  TP3-                   8  TP2-

65272
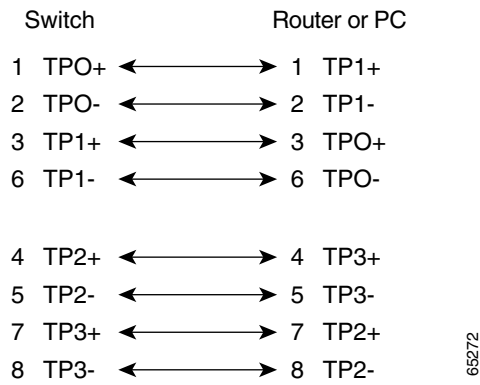
*Figure B-9    Four Twisted-Pair Crossover Cable Schematics for 10/100/1000 and 1000BASE-T GBIC Module Ports*

Switch                    Switch

1  TPO+                   1  TP0+
2  TPO-                   2  TP0-
3  TP1+                   3  TP1+
6  TP1-                   6  TP1-

4  TP2+                   4  TP2+
5  TP2-                   5  TP2-
7  TP3+                   7  TP3+
8  TP3-                   8  TP3-

65274
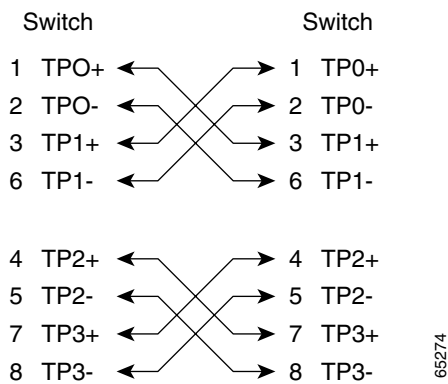
# Rollover Cable and Adapter Pinouts

This section describes how to identify a rollover cable (used to connect to the console port) and also describes the adapter pinouts.

## Identifying a Rollover Cable

To identify a rollover cable, compare the two modular ends of the cable. Hold the cable ends side-by-side, with the tab at the back. The wire connected to the pin on the outside of the left plug should be the same color as the wire connected to the pin on the outside of the right plug. (See Figure B-10.)

*Figure B-10   Identifying a Rollover Cable*



Pin 1 on one connector and pin 8 on the other connector should be the same color.

Pin 1 ——→

←—— Pin 8

H10632
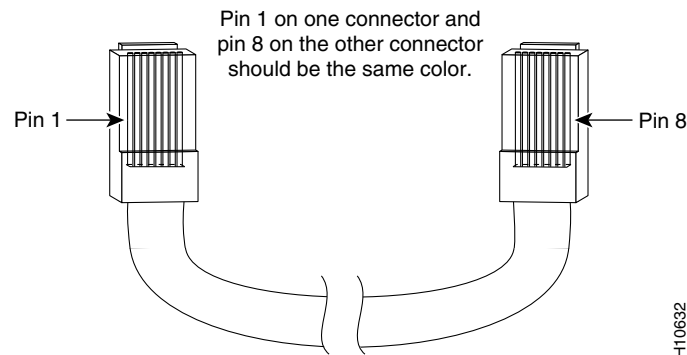
## Adapter Pinouts

Table B-2 lists the pinouts for the console port, the RJ-45-to-DB-9 adapter cable, and the console device.

*Table B-2    Console Port Signaling Using a DB-9 Adapter*

| Switch Console Port (DTE) | RJ-45-to-DB-9 Terminal Adapter | Console Device |
|---|---|---|
| Signal | DB-9 Pin | Signal |
| RTS | 8 | CTS |
| DTR | 6 | DSR |
| TxD | 2 | RxD |
| GND | 5 | GND |
| GND | 5 | GND |
| RxD | 3 | TxD |
| DSR | 4 | DTR |
| CTS | 7 | RTS |

Table B-3 lists the pinouts for the console port, RJ-45-to-DB-25 female DTE adapter, and the console device. The RJ-45-to-DB-25 female DTE adapter is not supplied with the switch. You can order a kit (part number ACS-DSBUASYN=) containing this adapter from Cisco.

*Table B-3    Console Port Signaling Using a DB-25 Adapter*

| Switch Console Port (DTE) | RJ-45-to-DB-25 Terminal Adapter | Console Device |
|---|---|---|
| Signal | DB-25 Pin | Signal |
| RTS | 5 | CTS |
| DTR | 6 | DSR |
| TxD | 3 | RxD |
| GND | 7 | GND |
| GND | 7 | GND |
| RxD | 2 | TxD |
| DSR | 20 | DTR |
| CTS | 4 | RTS |

**APPENDIX C**

# DC Power Connections

This appendix describes how to make DC power connections to the Catalyst 3550-24-DC switch. See the for instructions on installing the switch.

## Connecting to DC Power

To connect the Catalyst 3550-24-DC switch to a DC-input power source, follow the steps in these sections:

-
-
-

> **Warning** **The Catalyst 3550-24-DC contains no field-replaceable units (FRUs). Do not open the chassis or attempt to remove or replace any components. For information about obtaining service for this unit, contact your reseller or Cisco sales representative.** Statement 121B

> **Warning** **This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security.** Statement 1017

> **Warning** **Ethernet cables must be shielded when used in a central office environment.** Statement 171

## Preparing for Installation

Locate the ground lug and the two number-10-32 screws on the switch rear panel and the DC terminal block plug in the DC-switch accessory kit.

Obtain these necessary tools and equipment:

- Ratcheting torque screwdriver with a Phillips head that exerts up to 15 pound-force inches (lbf-in.) or 240 ounce-force inches (ozf-in.) of pressure
- Panduit crimping tool with optional controlled cycle mechanism (model CT-700, CT-720, CT-920, CT-920CH, CT-930, or CT-940CH)

- 6-gauge copper ground wire (insulated or noninsulated)
- Four leads of 18-gauge copper wire
- Wire-stripping tools for stripping 6- and 18-gauge wires

# Grounding the Switch

⚠

**Warning**      **This equipment is intended to be grounded. Ensure that the host is connected to earth ground during normal use.** Statement 39

⚠

**Caution**      To make sure that the equipment is reliably connected to earth ground, follow the grounding procedure instructions, and use a UL-listed lug suitable for number-6 AWG wire and two number-10-32 ground-lug screws.

⚠

**Warning**      **When installing the unit, always make the ground connection first and disconnect it last.** Statement 42

To ground the switch to earth ground, follow these steps. Make sure to follow any grounding requirements at your site.

**Step 1**      Locate and remove the ground lug and the two number-10-32 ground-lug screws from the rear panel of the switch. (See Figure C-3 for location.) Use a standard Phillips screwdriver or a ratcheting torque screwdriver with a Phillips head. Set the screws and the ground lug aside.

**Step 2**      If your ground wire is insulated, use a wire stripping tool to strip the 6-gauge ground wire to 0.5 inch (12.7 mm) ± 0.02 inch (0.5 mm), as shown in Figure C-1.

*Figure C-1      Stripping the Ground Wire*
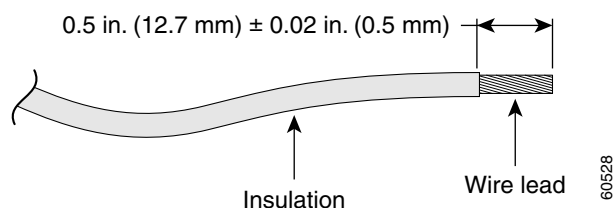


**Step 3**      Slide the open end of the ground lug over the exposed area of the 6-gauge wire.

**Step 4**    Using a Panduit crimping tool, crimp the ground lug to the 6-gauge wire, as shown in Figure C-2.

*Figure C-2    Crimping the Ground Lug*
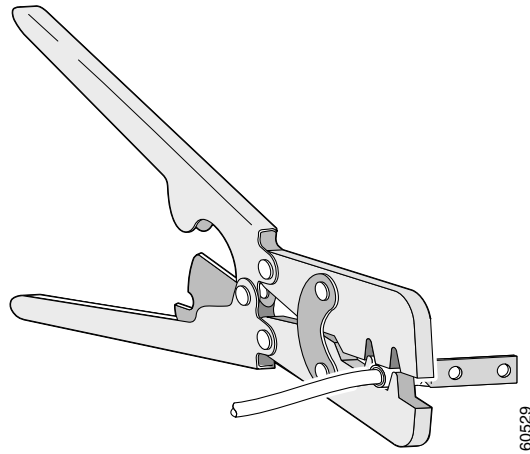


**Step 5**    Use the two number-10-32 screws to attach the ground lug and wire assembly to the switch rear panel RPS connector, as shown in Figure C-3.

**Step 6**    Using a ratcheting torque screwdriver, torque each ground-lug screw to 15 lbf-in. (240 ozf-in.)

*Figure C-3    Torquing Ground-Lug Screws*



Torque to 15 lbf-in.
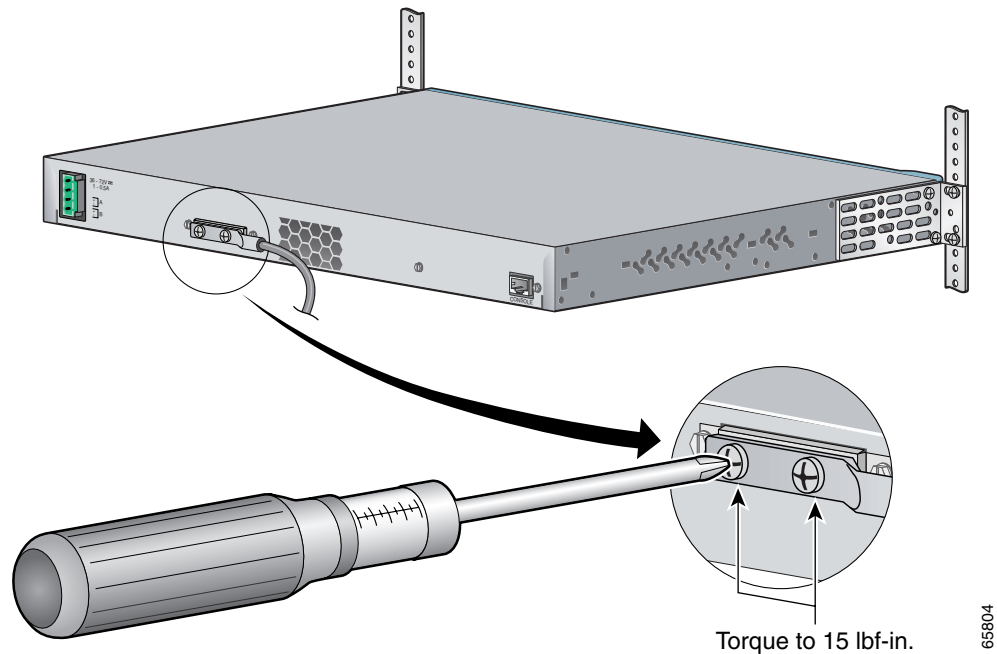
# Wiring the DC-Input Power Source

![Warning icon]

**Warning**  **Only trained and qualified personnel should be allowed to install, replace, or service this equipment.**
Statement 1030

![Warning icon]

**Warning**  **Before performing any of the following procedures, ensure that power is removed from the DC circuit.**
Statement 1003

![Caution icon]

**Caution**  You must connect the Catalyst 3550-24-DC switch only to a DC-input power source that has an input supply voltage from –36 to –72 VDC. If the supply voltage is not in this range, the switch might not operate properly or might be damaged.

![Caution icon]

**Caution**  The switch must be installed with 5 A-branch-circuit protection.

![Note icon]

**Note**  This installation must comply with all applicable codes.

To wire the switch to a DC-input power source, follow these steps:

**Step 1**  Locate and remove the terminal block plug (see Figure C-4).

*Figure C-4    Terminal Block Plug*
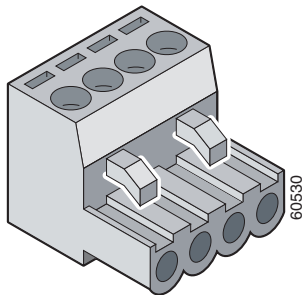
**Step 2**      Identify the positive and negative feed positions for the terminal block connection. The wiring sequence is positive to positive and negative to negative for both the A and the B feed wires. The switch rear panel identifies the positive and negative positions for both the A and B feed wires, as shown in Figure C-5.

*Figure C-5    Positive and Negative Positions on the Switch Rear Panel*
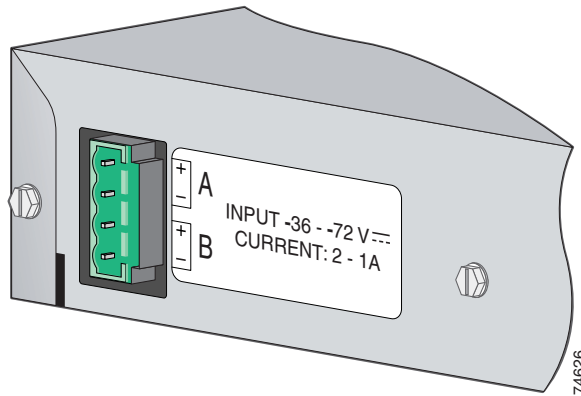


**Step 3**      Using a 18-gauge wire-stripping tool, strip each of the four wires coming from the DC-input power source to 0.27 inch (6.6 mm) ± 0.02 inch (0.5 mm), as shown in Figure C-6. Do not strip more than 0.29 inch (7.4 mm) of insulation from the wire. Stripping more than the recommended amount of wire can leave exposed wire from the terminal block plug after installation.

*Figure C-6    Stripping the DC-Input Power Source Wire*



0.25 inch (6.3 mm) ± 0.02 inch (0.5 mm)
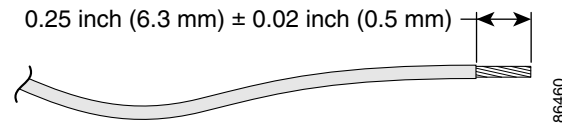
**Step 4**      Insert the exposed wire of one of the four DC-input power source wires into the terminal block plug, as shown in Figure C-7. Make sure that you cannot see any wire lead. Only wire *with insulation* should extend from the terminal block.

**Warning**      **An exposed wire lead from a DC-input power source can conduct harmful levels of electricity. Be sure that no exposed portion of the DC-input power source wire extends from the terminal block plug.**
Statement 122

*Figure C-7    Inserting Wires in the Terminal Block Plug*
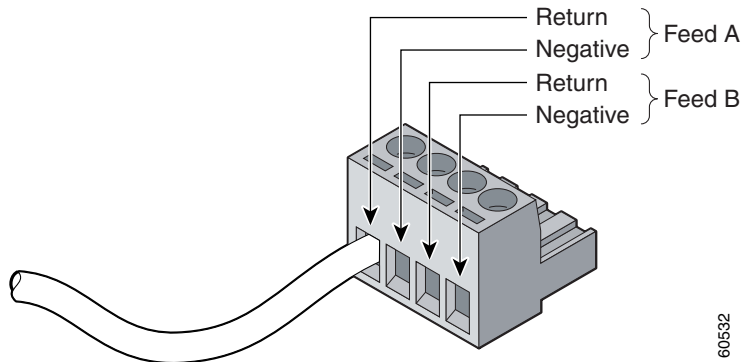


**Step 5**    Use a ratcheting torque screwdriver to torque the terminal block captive screw (above the installed wire lead) to 4.5 lbf-in. (72 ozf-in.), as shown in Figure C-8.

⚠

**Caution**    Do not overtorque the terminal-block captive screws. The recommended maximum torque is 4.5 lbf-in. (72 ozf-in.)

*Figure C-8    Torquing the Terminal-Block Captive Screws*



Torque to 4.5 lbf-in. (72 ozf-in.)
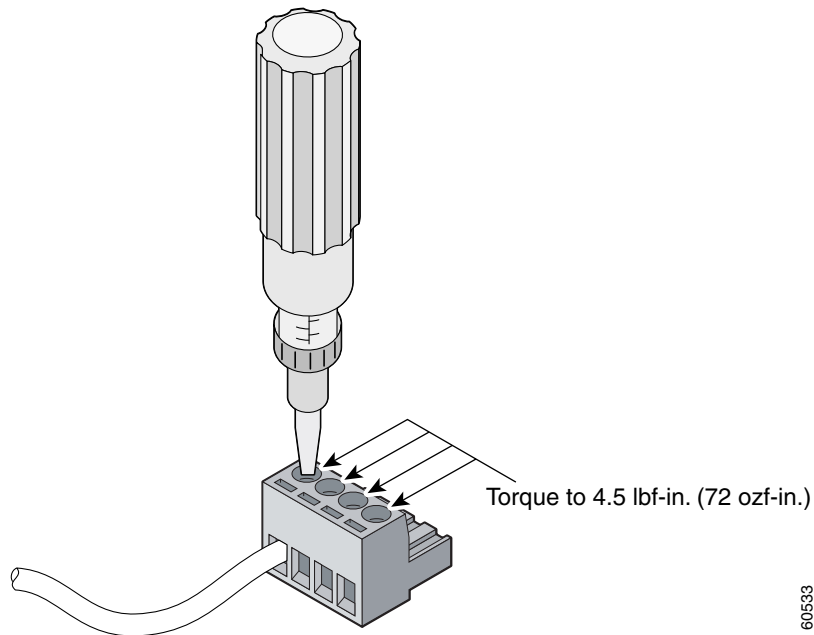
**Step 6**    Repeat Steps 4 and 5 for the remaining three DC-input power source wires. Figure C-9 shows the completed wiring of a terminal block plug.

*Figure C-9    Completed Wiring of Terminal Block Plug*
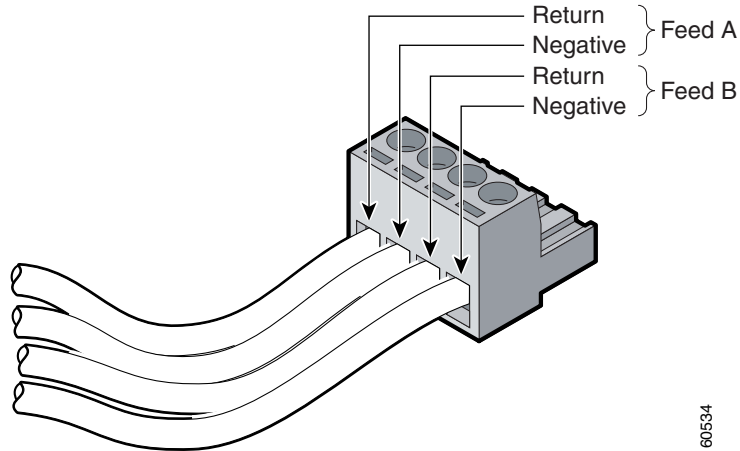


**Step 7**    Insert the terminal block plug in the terminal block header on the switch rear panel, as shown in Figure C-10.

⚠
**Caution**    Secure the wires coming in from the terminal block so that they cannot be disturbed by casual contact. For example, use tie wraps to secure the wires to the rack.

*Figure C-10    Inserting the Terminal Block in the Block Header*
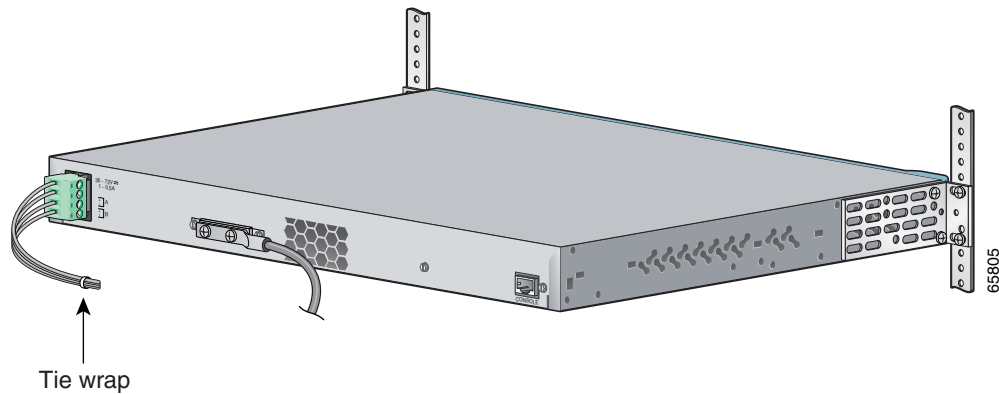


**Step 8**    Remove the tape from the circuit-breaker switch handle, and move the circuit-breaker handle to the on position.

⚠
**Caution**    To comply with the intrabuilding lightning surge requirements, intrabuilding wiring must be shielded, and the shield for the wiring must be grounded at both ends.

⚠
**Caution**    The Catalyst 3550-24-DC switch is suitable only for intrabuilding or nonexposed wiring connections.

# Configuring the Switch with the CLI-Based Setup Program

This appendix provides a command-line interface (CLI)-based setup procedure for a standalone switch. Before connecting the switch to a power source, review the safety warnings in Chapter 2, "Switch Installation."

For an unconfigured switch, you can access the CLI either through Express Setup or through the console port. These sections describe each method:

- Accessing the CLI Through Express Setup, page D-1
- Accessing the CLI Through the Console Port, page D-2

## Accessing the CLI Through Express Setup

Express Setup is supported on switches running Cisco IOS Release 12.1(14)EA1 or later. If you are installing an unconfigured switch, see the Cisco IOS release label on the rear panel of the switch to determine the software release.

**Note** For switches running releases earlier than Cisco IOS Release 12.1(14)EA1, go to the "Accessing the CLI Through the Console Port" section on page D-2.

You can access the CLI on an unconfigured switch by placing the switch in Express Setup mode and then by connecting a switch Ethernet port to the Ethernet port of your PC or workstation. To put the switch into Express Setup mode, follow the steps described in the getting started guide for powering on the switch and using Express Setup.

After the switch is in Express Setup mode, open a Telnet session to the switch by entering the IP address *10.0.0.1*. Enter the **setup** user EXEC command. See these sections in this chapter to then configure the switch by using the CLI:

- Entering the Initial Configuration Information, page D-4
- Completing the Setup Program, page D-5

After you have entered the configuration information for the switch, save it to Flash memory by using the **write memory** privileged EXEC command.

> ✎
>
> **Note**  While in Express Setup mode, the IP address 10.0.0.1 is active until you enter the **write memory** command. You lose the Telnet connection after entering the **write memory** command.

For more information about using the CLI, see the switch command reference for this release.

# Accessing the CLI Through the Console Port

You can access the CLI on a configured or unconfigured switch by connecting the console port of the switch to the serial port on your PC or workstation and accessing the switch through a terminal-emulation session. To access the switch through the console port, follow these steps:

- "Connecting to the Console Port" section on page D-2
- "Starting the Terminal-Emulation Software" section on page D-3
- "Powering on the Switch" section on page D-4

## Connecting to the Console Port

Follow these steps to connect the PC or terminal to the switch console port:

**Step 1**  Using the supplied RJ-45-to-DB-9 adapter cable, insert the RJ-45 connector into the console port on the rear of the switch, as shown in Figure D-1.

**Step 2**  Attach the DB-9 female DTE of the adapter cable to the PC serial port, or attach an appropriate adapter to the terminal.

*Figure D-1  Connecting a Switch Console Port to a PC*
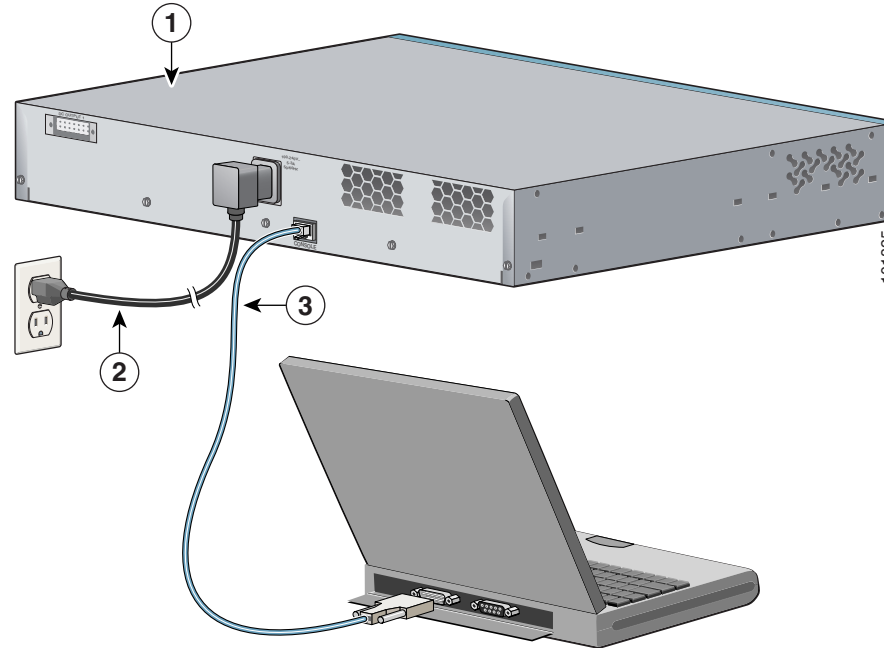


| **1** | Catalyst 3550 switch | **3** | RJ-45-to-DB-9 adapter cable |
|---|---|---|---|
| **2** | Power cord | | |

# Starting the Terminal-Emulation Software

Before you power on the switch, start the terminal emulation session so that you can see the output display from the power-on self-test (POST).

The terminal-emulation software—frequently a PC application such as Hyperterminal or ProcommPlus—makes communication between the switch and your PC or terminal possible.

Follow these steps to start a terminal-emulation session:

**Step 1**  Start the terminal-emulation program if you are using a PC or terminal.

**Step 2**  Configure the baud rate and character format of the PC or terminal to match these console port default characteristics:

- 9600 baud
- 8 data bits
- 1 stop bit
- No parity
- None (flow control)

## Powering on the Switch

Complete these steps to power on the switch:

**Step 1**    Connect one end of the supplied AC power cord to the power connector on the switch rear panel. See Figure D-1.

**Step 2**    Connect the other end of the power cable to a grounded AC outlet.

As the switch powers on, it begins POST, a series of tests that run automatically to ensure that the switch functions properly. If POST fails, see the "Understanding POST Results" section on page 3-1 to determine a course of action.

If you started the terminal emulation program before you powered on your switch, the PC or terminal displays the bootloader sequence. You need to press **Enter** to display the setup program prompt. See these sections to then configure the switch by using the CLI:

- Entering the Initial Configuration Information, page D-4
- Completing the Setup Program, page D-5

# Entering the Initial Configuration Information

To set up the switch, you must assign an IP address and other configuration information necessary for the switch to communicate with the local routers and the Internet. This information is also required if you plan to use the Network Assistant to configure and manage the switch.

## IP Settings

You will need this information from your network administrator before you complete the setup program:

- Switch IP address
- Subnet mask (IP netmask)
- Default gateway (router)
- Enable secret password
- Enable password
- Telnet password

# Completing the Setup Program

Follow these steps to complete the setup program and to create an initial configuration for the switch:

---

**Step 1**    Enter **Yes** at these two prompts.

```
Would you like to enter the initial configuration dialog? [yes/no]: yes

At any point you may enter a question mark '?' for help.
Use ctrl-c to abort configuration dialog at any prompt.
Default settings are in square brackets '[]'.

Basic management setup configures only enough connectivity
for management of the system, extended setup will ask you
to configure each interface on the system.

Would you like to enter basic management setup? [yes/no]: yes
```

**Step 2**    Enter a host name for the switch, and press **Return**.

On a command switch, the host name is limited to 28 characters; on a member switch to 31 characters. Do not use -*n*, where n is a number, as the last character in a host name for any switch.

```
Enter host name [Switch]: host_name
```

**Step 3**    Enter an enable secret password, and press **Return**.

The password can be from 1 to 25 alphanumeric characters, can start with a number, is case sensitive, allows spaces, but ignores leading spaces. The secret password is encrypted and the enable password is in plain text.

```
Enter enable secret: secret_password
```

**Step 4**    Enter an enable password, and press **Return**.

```
Enter enable password: enable_password
```

**Step 5**    Enter a virtual terminal (Telnet) password, and press **Return**.

The password can be from 1 to 25 alphanumeric characters, is case sensitive, allows spaces, but ignores leading spaces.

```
Enter virtual terminal password: terminal-password
```

**Step 6**    (Optional) Configure SNMP by responding to the prompts. You can also configure SNMP later through the CLI or Network Assistant. To configure SNMP later, enter **no**.

```
Configure SNMP Network Management? [no]: no
```

**Step 7**    Enter the interface name (physical interface or VLAN name) of the interface that connects to the management network, and press **Return**. For this release, always use vlan1 as that interface.

```
Enter interface name used to connect to the
management network from the above interface summary: vlan1
```

**Step 8**    Configure the interface by entering the switch IP address and subnet mask and pressing **Return**. (The IP address and subnet masks shown here are examples.)

```
Configuring interface vlan1:
Configure IP on this interface? [yes]: yes
IP address for this interface: 10.4.120.106
Subnet mask for this interface [255.0.0.0]: 255.255.255.0
```

**Step 9**    Enter **Y** to configure the switch as the cluster command switch. Enter **N** to configure it as a member switch or as a standalone switch.

If you enter **N**, the switch appears as a candidate switch in the Network Assistant. You can configure the switch as a command switch later through the CLI or the Network Assistant interface. To configure it later, enter **no**.

```
Would you like to enable as a cluster command switch? [yes/no]: no
```

You have now completed the initial configuration of the switch, and the switch displays its initial configuration. This is an example of the output that appears:

```
The following configuration command script was created:
hostname host-name
enable secret 5 $1$Ulq8$DlA/OiaEbl90WcBPd9cOn1
enable password enable_password
line vty 0 15
password terminal-password
no snmp-server
!
no ip routing

!
interface Vlan1
no shutdown
ip address 10.4.120.106 255.0.0.0
!
interface FastEthernet0/1
!
interface FastEthernet0/2

interface FastEthernet0/3
!
...<output abbreviated>
!
interface GigabitEthernet0/10
!
end
```

**Step 10**    These choices appear:

```
[0] Go to the IOS command prompt without saving this config.

[1] Return back to the setup without saving this config.

[2] Save this configuration to nvram and exit.
```

If you want to use the configuration the next time the switch reboots, save it in NVRAM by selecting option 2.

```
Enter your selection [2]:2
```

Make your selection, and press **Return**.

After you complete the setup program, the switch can run the default configuration that you created. If you want to change this configuration or want to perform other management tasks, use one of these tools:

- CLI

- Device manager from your browser (for one switch)

- Network Assistant (for one or more switches)

To use the CLI, enter commands at the *Switch>* prompt through the console port or through the network by using Telnet. For configuration information, see the switch software configuration guide or the switch command reference.

To use the Network Assistant, see the *Getting Started with Cisco Network Assistant* guide.

## Numerics

## A

## B

## C

**Catalyst 3550 Multilayer Switch Hardware Installation Guide**